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JPRS Report

Central Eurasia

Military Affairs

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ARMED FORCES ISSUES

Possible Voting Preferences of Military Personnel Examined

95UM0413A Moscow IZVESTIYA in Russian
21 Apr 95 p 4

[Article by Aleksandr Golovkov: "For Whom Will Lt Ivanov Vote?"; "The Coming Parliamentary and Presidential Elections Make the Question of Preferences and Behavior of the Military Electorate a Topical One"]

[FBIS Translated Text] It appears that there have been marked shifts in the views of medium-level command personnel under the influence of changing realities. Soviet "comrade officers" are beginning to feel like officers of the Russian Armed Forces. That is one of many conclusions which can be drawn on the basis of a study conducted in December 1994 through March 1995 by experts of the IZVESTIYA Analytical Center.

In the course of the research, officers of several military districts, chiefly of the Moscow and Northern Caucasus districts, were polled. Besides their answers, the respondents were asked to give qualitative and quantitative assessments to a number of questions (in points), regarding the probability or desirability of particular events. The data obtained was then processed, including with the use of conventional statistical methods. They give us some idea of the political priorities of the average statistical Lieutenant (Captain, Major) Ivanov.

Table 1 shows the statistical distribution (in percentage) of estimates of desirability and probability of realization of the following models of Russian statehood: restoration of the USSR; Russia in the current borders; a union state combining Russia, Ukraine, Belorussia and Kazakhstan.

Table 1

	Desireable	Probable
USSR	20%	18%
Russia	37%	60%
Union of 4 Republics	43%	20%

After the collapse of the Soviet Union, the very concept of the Fatherland acquired a dark character, and for many it remains such to this day. At the same time, the nostalgic image of the USSR is gradually being supplanted by new geopolitical ideas about their state in its present condition and in the predictable future.

The idea of reintegration of the four republics of the former USSR which are the closest in terms of culture, historical roots, and national mentality (in the spirit of the notions of A. Solzhenitsyn) "warms" officer hearts. But the development of a new Russian state in its current borders is the most likely and quite acceptable variant of development in the foreseeable future.

Sociological public opinion polls conducted by various services at the end of 1994 and start of 1995 show that the Army and its officer corps (together with the church and the independent mass media) retain the highest degree of trust on the part of society, in contrast to the structures of state authority, executive and legislative equally, which provoke an increasingly negative attitude on the part of citizens. However all those questioned, without exception, agree in the opinion that the armed forces must not be used as an instrument of internal policy. At the same time, the majority note that in the foreseeable future, the participation of the military in politics in one form or another is inevitable. The estimates of probability (as a percentage) of different variants of such participation are represented in table 2.

Table 2

Army will stay out of politics	23%
Army will assume leadership of state	16
Army will periodically become involved in resolution of individual conflicts	41

Thus the possibility of establishment of a military dictatorship is assessed by the military themselves as an undesirable and unlikely variant of the future development of Russia.

The Chechen conflict, which revealed many defects in the activity of the highest military command, again illuminated the problem of the relationship between formal and informal leaders of the armed forces.

The ratings offered by poll participants for a number of foremost military leaders are shown in table 3. The evaluation was made with respect to two basic parameters, defined as the level of professionalism and the level of personal prestige of those evaluated. The maximal rating was 100.

Table 3

	Level of Professionalism	Level of Personal Prestige
M. Kolesnikov	90	77
A. Nikolayev	80	63
A. Lebed	26	50
A. Kvashin	54	46
P. Grachev	23	21

Thus after the departure of B. Gromov, G. Kondratyev and V. Mironov from the armed forces, a new system of authorities developed in the mass officer consciousness, in which first place went to professionals known primarily in the specific military environment and little "covered" in the mass media (except for the Commander-in-Chief of the Border Troops, A. Nikolayev). The high

marks given to the Chief of the General Staff M. Kolesnikov and his protege A. Kvashnin, the present Commander-in-Chief of the Northern Caucasus District, may be explained by the action of the "Chechen factor." In the military environment there is a persistent opinion that it was these generals who achieved the turning point in the course of the campaign, the start of which, many believe, was botched by the minister of defense.

The comparatively low marks given to General A. Lebed were unexpected, but nonetheless a quite natural result. A number of his actions and words in the initial period of the campaign shocked the military. (Subsequently, as is known, the general adjusted his position and at present is by no means acting as a "dove" with regard to Chechnya).

Events and processes occurring in the political sphere as a rule provoked a sharply negative reaction in those polled, and in the best case, indifference. Basically the activity of the majority of politicians from all sectors of the political spectrum, from Zhirinovskiy and Rutskoy to Gaydar are assessed negatively. Among the highest state leaders, V. Chernomyrdin, S. Soskovets, and I. Rybkin are perceived of as best—attitudes toward them may be characterized as indifferent to positive.

The activity of the parliamentary military was practically unfamiliar to those polled, with the exception of the speeches of S. Yushenkov, which were rated very negatively.

Practically all of those polled believe that none of the existing parties can count on significant popularity within the military environment. Including the LDPR. However, some believe that the votes of service members may be attracted by the names of respected military, if they are on the first "troikas" of the party lists.

With regard to the possibility of cancellation of the presidential election and extension of the period of authority of B. Yeltsin, opinions were divided, with the majority against this variant.

The assessment of possible results of the voting of service members in the presidential elections is shown in table 4. This estimated (in percentages) the likelihood that in the voting of military, [the following] would gain a great advantage: Yeltsin, Zhirinovskiy, Rutskoy, a respected candidate from among the generals (Gromov, Lebed, and so forth), and also a variant in which Army votes were distributed irregularly. (It was characteristic that those polled did not count Rutskoy as a military politician).

Table 4

Military Candidate	33%
Votes Divided	30%
A. Rutskoy	16%
B. Yeltsin	12%
V. Zhirinovskiy	9%

As is evident from the data obtained, the military do not have clear preferences with regard to potential candidates for president. Thus the voting of officers (and probably of their subordinates) will be determined not by corporative but by very individual passions.

In summarizing the above, one can conclude that in the consciousness of the mid-level strata of the Russian officer corps, at present the priorities of corporatism, professionalism, and depolitization of the armed forces are gaining ground. This mentality is some guarantee against the involvement of the Army in any dubious political actions.

At the same time, the observed distancing (largely deliberate) of the military from politics as a whole and from those in power in particular must be viewed with alarm. The expectation of military reform, which has been drawn out without end, and most importantly, of the establishment of elementary order with regard to financing and material and technical support of the armed forces, has already exhausted the reserves of patience of the officer personnel.

Even if one ignores the various "non-standard" variants of development of events, in any case one must not disregard the influence of the military electorate on the course of elections this year and next. This is some two million voters in uniform plus the family members of servicemen plus the veterans of recent campaigns (Afghan, Chechen), and many other categories of citizens associated in one way or another with the country's defense complex.

Kaliningrad Command, Staff Exercise: 17-22 April
95UM0405A Moscow KRASNAYA ZVEZDA in Russian
19 Apr 95 p 1

[Article by KRASNAYA ZVEZDA Correspondent Valeriy Gromak, under the rubric: "From Kaliningrad": "The Old Navy Is the Most Reliable"]

[FBIS Translated Text] Kaliningrad Special Rayon command-post exercises are being conducted in the Baltic under the leadership of Navy Commander-in-Chief Admiral Feliks Gromov from April 17 through 22. Issues of the coordination of all command and control organs of the structure created last year will be rehearsed during the course of the exercises.

The Baltic Fleet—the best among the fleets based upon 1994's results—will simultaneously undergo an end-of-training-period performance evaluation for the winter training period.

MILITARY POLICY

Presidential Order on Military Reform Conference
95UM0391B Moscow KRASNAYA ZVEZDA
in Russian 13 Apr 95 p 3

["Russian Federation Presidential Order "On Holding a Research and Practical Conference Entitled 'Military Reform in Russia'"]

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[FBIS Translated Text] With a view to ensuring implementation of the provisions of the Russian Federation president's message to the Russian Federation Federal Assembly, "On the Efficacy of State Power in Russia," as concerns military development:

1. To direct the Russian Federation presidential administration and the Russian Federation Government to hold a research and practical conference entitled "Military Reform in Russia" (hereinafter referred to as the conference) on April 19-21, 1995, in Moscow.
2. To direct the chief of the Russian Federation presidential administration to confirm the makeup of a commission to prepare and hold the conference and the procedural rules of the conference.
3. To charge the Russian Federation presidential administration with providing organizational and technical support for the conference.
4. Expenses incurred in holding the conference are to be charged to the budget of the Russian Federation presidential administration.

Expenses for accommodations and meals for the conference participants are to be charged to the sending organizations.

[Signed] B. Yeltsin, president of the Russian Federation
7 April 1995
No. 167-rp

Arbatov Urges Civilian Control Over Armed Forces

95UM0399A Moscow NEZAVISIMAYA GAZETA
in Russian 18 Mar 95 p 3

[Article by Aleksey Arbatov, chairman of the State Duma Defense Committee Subcommittee on International Security and Arms Limitation and member of the Yabloko faction: "Ministry of Defense of the Russian Federation: Civilian or Military Minister? It Has Nothing To Do With a Civilian Minister Being Smarter or More Peaceable"]

[FBIS Translated Text] Having a civilian as head of the military department is abhorrent to both Russian and Soviet traditions. Even in the rare instances when a civilian (like Dmitriy Ustinov, for example) fetched up in the office of war minister, he was immediately given gold shoulder boards lest an undesirable precedent be set.

In an authoritarian or totalitarian society (be it absolutism, "real socialism," fascism, or typical third world regimes) the question of civilian control over the army and military policy simply does not arise. The military and political authorities there are profoundly integrated since military strength is the basis of power and the principal guarantor of the regime of political, economic, and ideological compulsion. In such a society not only

does the thought of a civilian defense minister not arise, the departments of state and the leaders are themselves militarized.

On the contrary, there is no democratic state in which the head of the military department is not a civilian—however different the national traditions of such countries as the United States, France, Germany, India, or Japan might be. This is not a fortuitous coincidence but an iron regularity.

The democratic state rests not only military strength but on a firm legal base. It establishes rules of constructive competition in economics and politics and mutual obligations of the state and the citizens, without which there is no consensus, freedom, or prosperity in society. If a country's external interests require the maintenance of substantial armed forces, strict guarantees are established against the army being used by perfidious politicians for a violation to their own benefit of the rules of social life. Or against the army itself attempting to subordinate the state to its specific interests.

The basic principles of civilian control have been well honed, despite the specifics of individual countries, and it would be absurd to reinvent the wheel here. These principles are essentially three: a civilian defense minister with an analytical staff subordinate to him; the extensive involvement of parliament in military policy and detailed parliamentary supervision of the military budget; and maximum openness of information on defense matters.

It has nothing to do here with a civilian minister being smarter or more peaceable than a military minister—quite the opposite, more often than not. The point lies elsewhere: A civilian appointee will always be a conduit of the policy of the president or the premier in the Ministry of Defense. Whereas a military defense minister is invariably a representative of the armed forces in the government or in the office of the president. Neither the president nor any aide of his can control military policy from outside of the Defense Ministry, whatever the formal authority with which they are endowed, unless the political leadership has a direct, substantial, and permanent presence within this exclusive organization of colossal proportions, cost, and complexity.

Otherwise the military establishment inevitably orients in accordance with the vector of its departmental interests any higher authority—by the appropriate selection of information and incontrovertible expert assessments and scenarios. A heavy veil of secrecy and the small number (and, until recently, the absence) of independent experts and also the oppressive emotional aura of the very subject of military security for a people which have suffered so much in endless wars contribute to this to a considerable extent.

The second inalienable element of control operates via parliament. Approving military appropriations for the

smallest items and monitoring their expenditure, parliament becomes the forum at which representatives of the Ministry of Defense have to convincingly substantiate their requests. The practice of secret interdepartmental compromise leading to a dispersal of funds is thereby limited. It is easier for a civilian representative of the Ministry of Defense, as a rule, to find a common language with the deputies, and for them, to conduct a dialogue with him on military matters on an equal footing. As distinct from this, members of parliament display either servile fawning or flagrant hostility with a military minister.

In order to exclude secrecy in parliament also and to ensure the better preparedness of the legislators in decisionmaking, the maximum openness of military information and the attraction of independent experts and alternative opinions from academic circles and public organizations are needed. There is no rational reason why the knowledgeability and assertiveness of the deputies in military policy should be less than on economic and social matters. This is the third element of control.

But aside from these general binding principles, civilian control has acquired particular importance in the present Russian situation, when both the country and the army are experiencing a most difficult period of transformation with entirely nebulous prospects.

When there are tumultuous changes and an unprecedented domestic political struggle in such a country as Russia—a great nuclear power—the enlistment of the army in policy is fraught with the most dangerous consequences for the country and the world. On the other hand, it is understandable that the head of the Ministry of Defense should be appointed by the president and should be his loyal associate. And a civilian minister with his own staff would serve as a “buffer” here between the political leader and the armed forces. While a given president and defense minister are in office, the army should, within the framework of the Constitution and the laws, follow their instructions. When, as a result of elections, other officials appear, the army accepts them as right and proper and goes about its business under them of providing for the country's defenses.

A military minister, on the other hand, is by definition the most senior and, theoretically, most authoritative officer of the armed forces standing at the apex of a continuous command hierarchy. As the loyal associate of a specific leader, he inevitably involves this entire army pyramid in the political battles of the specific directive group.

With a civilian minister the army essentially has “contract” relations on a legislative basis. As a last resort, if such a minister gives an illegal order, the army refuses to fulfill it relatively painlessly. If such an order is given by

a military minister, its nonfulfillment explodes the principle of unquestioning subordination and unity of command and leads to a split in the army with all the dire consequences. Fulfillment leads the armed forces as a whole out of the legal field.

The said negative aspects were clearly on display in August 1991, in October 1993, and in the Chechen epic of 1994-1995, when the army was pulled into the performance of actions which are not typical of it and which are dubious in a legal respect and into a maelstrom of political passions and divisions in Moscow. It would be an oversimplification, of course, to attribute everything to the presence of a military, not a civilian, minister of defense—the fuse of the crises in all these cases were the actions of the top political leaders. Nonetheless, the factor of a military commander in the office of minister of defense closely linked with the absence of legalized civilian control over the army, the vagueness of the legal framework of its use, and its involvement in a domestic political struggle performed a bad role both for the country and for the armed forces.

The inclination of the president to monopolize control over the army and a reliance on power methods of a resolution of domestic political problems and a disregard for legal standards are making the president himself increasingly dependent on the armed forces and entailing the political leadership's loss of control over the army. Which has been manifested in the Chechen events, when the leader says and promises one thing, and the troops do another.

Military reform is the second aspect of the present Russian specifics.

In the Soviet Union the top leadership strictly monitored the political place, ideology, and actions of the military via the all-penetrating structure of the Main Political Directorate and the security authorities. Having eliminated the political authorities, the Russian leadership produced nothing in exchange when it came to political control over the armed forces. The good personal relations of the president and the defense minister are too fragile a basis for such control. Under the conditions of the rapid and largely destructive changes the army was left to the whim of fate. Profound military reform was demanded of it (as conversion was demanded of defense industry), but nothing was done in the plane of political direction of the reform and control of its implementation.

As was to have been expected, it proved impossible to undertake military reform from within a department undergoing reform. The chief of the General Staff himself has spoken about this repeatedly, incidentally, and this was confirmed by the president in his 1995 message. It is the absence of some in any way serious military reform in a situation where economic, sociopolitical, demographic, geostrategic, and other conditions in the country have changed beyond recognition which is the fundamental cause of the present unprecedented crisis of the armed forces.

The president cannot command the armed forces and their reform directly in peacetime: He has too many other concerns of state. Supplied with diverse operational, economic, technical, and political expert opinion, a civilian minister is, in principle, more dispassionate in determination of the priority of the branches of the armed forces and their assignments, the allocation of appropriations, and arms programs.

A military minister always comes from some particular branch of the armed forces and arm of the service. If he is a good officer and has made high rank, he must be a patriot of his profession. But it is this that makes him unobjective in choice of priorities.

The positions of the armed forces before a civilian minister are presented by the General Staff, the command of the branches, and the directorates. If they disagree with the minister, they can appeal to the president and parliament and defend their opinion.

For the timely disclosure and rectification of mistakes, which are inevitable in the course of transformations, the regular replacement of the leadership of the Ministry of Defense is advisable. In respect to a civilian minister this is just as simple as with any other member of the government.

With a military minister, who is theoretically the best and most authoritative representative of the army, removal from office is on each occasion attended by a blow struck at the prestige and morale of the army.

The further the actual policy of the leadership retreats from the proclaimed democratic goals, the more the obstacles there are in the way of real, not fictitious, military reform, including the establishment of civilian control over the armed forces and other power structures. Although at first sight paradoxical, the worse things in the country and the army become (the president revealed in his recent message that there had been no successful military reform in the past three years), the stronger the position of the minister under the president. The minister of defense of the Russian Federation recently deemed it possible to state publicly even that all who were against him were those who want to bring down the president, but he was standing in their way. Such dialectics evoke concern in connection with the 1996 elections, which have not been canceled as yet, and promise nothing good either for the armed forces or the state or its present chief.

Undoubtedly, the question does not amount merely to the appointment of a civilian as minister of defense: this is just one, although very important, element of a broad set of transformations. Specifically, serious changes of the legislative base in the military sphere are needed. Primarily, the functions of operational troop control and combat training should remain in the General Staff and the command of the branches of the armed forces. A civilian head of the Ministry of Defense should be

accorded overall leadership of military policy, justification of its priorities and force levels and structure, administrative management, and personnel, programs of arms purchases and R&D, logistical support, social policy, and so forth. Legislative measures to extend the authority and improve parliamentary participation in military policy and military organizational development are essential also.

Although it appears original, the direct subordination of the Ministry of Defense to the president with the General Staff retaining military command and control and combat troop training that is being discussed at this time would in practice be the worst option. In wartime the president is commander in chief as it is. In peacetime the combination in one person of the posts of head of state and head of the army characteristic of militarized regimes of developing countries would either preoccupy the president with military matters entirely or leave the army to the arbitrary action of his aides with nugatory authority. All this, not to mention the confusion, duplication of functions, and disruption of the evolved interaction, would disorganize defenses utterly.

The traditional system has reached a profound impasse also, and thinking military personnel should not support it. The government budget provides for defense three times less than the command's request. The president, the cabinet, and parliament are intervening little in matters of military policy and military organizational development here. Accordingly, no one is responsible for them, no one is seriously helping the army adapt to the country's new internal and external living conditions. Russia's military policy lacks clear priorities, consistency and financial predictability, and a broad domestic policy base which would free it from dependence on impulsive decisions and surreptitious intrigues in the power spheres.

Today, when a war is being fought in Chechnya, the domestic political role of the army has risen sharply and some members of parliament are calling directly for a military coup, it is unpopular and risky for Russian politicians to propose the establishment of civilian control over the armed forces. Nonetheless, civilian control is a first and necessary step for giving military reform its "second wind," rescuing the army, and establishing democracy and the security of society.

Impact of Reform on Military Infrastructure

95UM0386A Moscow KRASNAYA ZVEZDA in Russian
11 Apr 95 p 2

[Article by Col Gen Viktor Barynkin, chief of the Main Operational Directorate and deputy chief of the General Staff of the Armed Forces of the Russian Federation, under "Interests of Russia" rubric: "Military Infrastructure of the State"]

[FBIS Translated Text] **What is the nature of military reform? As strange as it may seem, today, almost three years after the establishment of the Armed Forces of**

Russia, this question is still on the agenda. Moreover the events in Chechnya have made it acute and shown that reforms in the Army cannot be successful outside of reform of the society as a whole, including, it would seem, in such a "narrow" area as the military infrastructure, which we have almost forgotten recently. In what direction should we go here? How can the tasks be resolved under the new conditions? The chief of the Main Operational Directorate of the General Staff of the Armed Forces of the Russian Federation reflects on this.

First let us recall just what the military infrastructure is. To put it simply, it is the totality of facilities and individual structures intended for the accomplishment of military actions and also for the daily training of the troops and the servicing of military production in peacetime. In assessing its present state in the territory of Russia, one reaches a disconsolate conclusion. As a result of the disintegration of the USSR, the integrity of the infrastructure of strategic nuclear forces and the system for reconnaissance and warning against a nuclear attack by the enemy were disrupted. The possibilities of the radar field of the system for reconnaissance and warning of the Air Defense Forces were significantly reduced. There were changes in the conditions for the basing, stability, and operational command and control of naval forces and also for the guaranteeing of the safety of navigation in the Baltic, Black, and Caspian seas. The technical state of most military air fields no longer permits the basing of contemporary aircraft....

Things are no better with respect to national (dual-purpose) facilities. Take, for example, the highways, the length of which per 100 square km of territory is less by a factor of 10 to 30 than in developed foreign countries. There are practically no up-to-date main highways that in wartime could be used by the air force as takeoff and landing strips for frontal aircraft. I am not even talking about bridges: five percent of them are in an emergency state and 40 percent require reconstruction or major repairs.

The situation is analogous in regard to the railroads. With the collapse of the Union, we have four railroad routes in the western region, essentially one in the internal region, and only the Transsiberian Line in the east, because the BAM [Baykal-Amur Line] is practically not operational.

Thus, an analysis of the existence and state of the facilities in our military infrastructure allows us to draw the conclusion that it does not represent an integrated whole and does not fully guarantee the defense interests of the Russian Federation as a sovereign state.

And what is the situation in this regard for our current partners, so to speak? From the moment of the formation of the NATO bloc, its military infrastructure has been established and improved in the scope of the special "Long-term Plan of the NATO Joint Armed Forces in Europe for the Building of the Infrastructure." And no changes in the world and no revolutions ever

disrupted its implementation. At the present time, the primary efforts here are concentrated on the development of command and control systems and depot and air field networks in the north European and south European theaters, that is, on support of NATO flank forces. As a result, the entire territory of the NATO zone of responsibility with the corresponding facilities of the military infrastructure fully provides for combat and operational training and—when necessary—for the deployment of armed forces and their performance of full-scale military operations.

Based on what has just been said, we see that to establish a military infrastructure that meets the present requirements for the security of Russia it is necessary to resolve a number of problems at the national level, paramount among which is the development of a normative-legal basis. Why? An analysis of the content of the articles of the Law of the Russian Federation "On Defense," the "Basic Provisions of the Military Doctrine of the Russian Federation," and a whole series of studies and materials of the periodic press in the area of the military infrastructure shows both a different treatment of the concept of "operational equipment of the territory of the country in the interests of defense" and the direction of their realization by agencies of state executive authority. We therefore propose making some changes and additions to the existing normative-legal documents. In the Law of the Russian Federation "On Defense," define the mechanism for the realization of questions in the operational equipment of the country's territory and the rights and duties of agencies of federal authority and agencies of local self-government, enterprises, and citizens. In the "Basic Provisions of the Military Doctrine of the Russian Federation," define the place and role of the operational equipment of the country's territory in the system of state security.

But today in the course of the refinement of the Law "On Defense," some officials of federal bodies of legislative and executive authority are already trying to abolish the very concept of the "operational equipment of the country's territory in the interests of defense," justifying their arguments with the fact that the taxpayers supposedly cannot understand this term. Instead they are proposing the concept of "operational-strategic equipment." But it significantly narrows the complex of measures to be carried out. For example, it excludes such fundamentally important aspects as legislative support of responsibility and a mechanism for the interaction of federal administrative agencies, administrative agencies of the subjects of the federation, local self-government, and the Armed Forces of the Russian Federation in the operational equipment of the country's territory; the development of specific national programs; a system of measures in production and social spheres providing for the mobilization deployment of industry; the protection of administrative, industrial, and other population centers....

I hope that the reader understands that it is not a matter of terms but of their essence and a clear violation of

existing normative-legal acts, including the directive from the president of Russia where they are set forth.

But possibly the main thing is that the establishment of the country's military infrastructure based and strictly regulated at the national level is one of the basic components of the military reform of the Armed Forces about which there is so much talk. Precisely this provides for an improvement of their qualitative parameters under the conditions of a reduction of personnel strength, armament, and hardware. True, this question is also legitimate: Are we not, figuratively speaking, burying the people's money in the ground?

I think that the operational equipment of the country's territory should be carried out comprehensively and closely coordinated with the infrastructure of the economy and elements of social and ecological protection of the population. And this must be done at the new national boundaries of Russia taking into account the specific danger and level of the military threat as well as the new realities of collective security of the CIS. What is meant? In connection with the disruption of the integral system of the military infrastructure and financing of the interaction of military administrative agencies of independent states, the question arises of the use of the military facilities remaining in their territories that represent the interests of Russia, above all strategic interests. In what way? We offer several versions: the giving of the status of facility of the Armed Forces of the Russian Federation; the signing of an agreement on its leasing or joint use; the signing of bilateral agreements with some state or other on the maintenance, use, and financing of the facilities needed by the Armed Forces of the Russian Federation.

All of this will provide for the deployment of groupings of armed forces and other forces of the Russian Federation in a period of threat with minimum expenditure of material and time for transportation and maneuvers; it will protect force groupings against massed missile and air strikes; it will make it possible to establish systems of command and control and notification that are echeloned in depth and axes and networks of bases for the storage of supplies and other materials.... And ultimately the switching of the country to martial law. Although it will require, of course, closer interaction with the Federal Border Service and Ministry of Internal Affairs in the establishment of a comprehensive system for rear support of troops under the territorial principle, which is dictated by the presence of units and combined units on the borders of military districts (and fleets) that are part of the border, internal security, and railroad troops and so on. But these are the realities of the time.

Is the Ministry of Defense capable of resolving this overall task on the basis of the funds allocated in the budget? Naturally not. It has therefore become necessary to go to the Government of the Russian Federation and State Duma with a proposal on a special appropriation from the federal budget for the execution of the state

program for the operational equipment of the country's territory that provides for the financing of its measures and that eliminates the residual principle. Such an approach will guarantee the centralized establishment of a military infrastructure on a national scale and will preclude the appearance of intradepartmental interests of the ministries to the detriment of national security.

Apparently it will also be necessary to establish a structure for the management of the operational equipment of the country's territory: in the Security Council of the Russian Federation, Government of the Russian Federation, and ministries and departments that have troops under them.

And what about the use of dual-purpose facilities of the national economy (air fields, roads, railroads, hospitals, sea and river ports, etc.)? All of them will be utilized only in the period of threat and in the preparation for military operations. But today it is necessary to specify the appropriate mobilization plans. Under these plans, the ministries, departments, and agencies of local self-government turn over production and repair-restoration enterprises, public, cultural, and educational institutions, buildings, and structures in the interests of the Armed Forces and the necessary number of hospital beds for medical assistance and treatment of injured and sick servicemen.

The performance of the above-enumerated measures requires continual improvement of the preparation of facilities in the national economy for work in the period of threat. Unfortunately, however, this is practically not being done at this time.

I will stress once again: the task is enormously complicated and it can be resolved only with a careful and detailed scientific study of all questions in the development of the military infrastructure in the territory of Russia. Unfortunately, military science has not yet paid the proper attention to this problem, as a result of which we now have to reap the fruits of poorly conceived decisions. But now this must become one of the priority directions. And obviously a key link here will be the concept approved by the president for the operational equipment of the territory of the Russian state, which had and has its own geopolitical interests.

Speculations on Future Defense Leadership

95UM0406A Moscow ROSSIYSKAYA GAZETA
in Russian 13 Apr 95 p 2

[Article by Col (Res) Vladimir Klimov: "More Like a Smokescreen: By the Will of the Times or by the Hand of Particular People, the Reform in the Army Will Go On"]

[FBIS Translated Text] In its 11 April edition KOMSOMOLSKAYA PRAVDA delighted us with one of its typical sensational reports: The concept of military reform has finally been finished. This was reported by an anonymous associate of the presidential administration to an anonymous correspondent of the newspaper.

And so, dual anonymity. What makes it necessary, and what is hidden behind it?

First about the concept of the reform itself, which the newspaper presents as something new. Unfortunately, it isn't. In the beginning of the year our newspaper published an article by General of the Army Vladimir Lobov, former chief of General Staff, rightfully referred to as the father of military reform. The principles communicated by KOMSOMOLSKAYA PRAVDA had been developed by the military chief and scholar (Lobov is a doctor of military sciences) many years ago. Demotion and unlawful discharge into the reserves are what this concept of military reform brought to Lobov. Thank God someone is finally listening to his ideas. But why is something old and well known being presented as something sensationally new?

"To impress in the minds of people the names of candidates for the highest positions in military circles wanted by someone (who that is, is unclear), to cause division in the administration of the Ministry of Defense, and to create an unhealthy atmosphere there." An officer of that same military ministry administration ventured this opinion to me in an interview, and I cannot but agree with it.

Colonel General Andrey Nikolayev, the current director of the Federal Border Service, was nominated to the position of chief of General Staff. I'm acquainted with him. He's a smart, knowledgeable, very authoritative and, finally, intelligent leader (qualities rarely encountered, by the way). I'd vote with both hands for any promotion for Nikolayev. But on several occasions he himself has publicly rejected attempts to move him from his chair in the border troops to the military, even though this would mean a higher position—a minister's portfolio.

But this time, nomination of A. Nikolayev, whose reputation is known to all, was brought on by the fact that someone is not very happy with the successes of the former chief of General Staff, Colonel General Mikhail Kolesnikov. After all, he was able to get something almost improbable from the State Duma—an extension of the term of compulsory service. He did this by speaking brilliantly at hearings and soundly deflecting all attacks upon his proposal. The deputies came to understand that the army had to be strengthened if the state was to be strengthened.

However, the anonymous authors won't see it this way.

The second nominee announced to all the people by KOMSOMOLSKAYA PRAVDA is Andrey Kokoshin, the first deputy to the present defense minister. He is being groomed as a civilian defense minister.

The poor quality of the combat equipment that Russian troops used in Chechnya, which is obsolete by all standards, has been demonstrated. This was, incidentally, one of the main reasons for the initial failures. No one

took responsibility for it, even though A. Kokoshin is personally answerable for the armament of the Russian Army.

I asked many military specialists if they knew of a single defense ministry in Western countries that was engaging in arms trading. The answer was categorical: There isn't such a thing in the West—there, defense ministries only buy equipment and weapons for themselves. But in our country, Andrey Kokoshin is a practically permanent representative at all arms auctions. Might it perhaps be more suitable in such a case for him to take charge of Rosvooruzheniye?

All the more so because Mr Kokoshin is one of the organizers of the journal VOYENNY PARAD, which is under the direction of an American citizen. Many articles have already been written about the fact that an American wouldn't spend enormous amounts of money to publish the journal without regard for his own interests and the interests of the United States, and as for what the nature of the activity of the VOYENNY PARAD Joint-Stock Company is, it has been communicated on the basis of facts and documents—the sale of weapons, secrets regarding the latest combat equipment and so on.

Minister of Defense Army General Pavel Grachev categorically refused not only to join the journal's military-industrial council, but also to write articles for it. Yelena Agapova, an assistant to the defense minister, told me that A. Kokoshin had also supposedly left this council. However, on opening the latest edition I saw that nothing of this sort had occurred, and that the first deputy minister is still friends with the American publisher.

Who is KOMSOMOLSKAYA PRAVDA proposing for the defense ministry, and why? This is a question that the anonymous source from the presidential administration should think about as well.

Now about a civilian Ministry of Defense. It is hard not to agree with Pavel Grachev when he asserts that the position of a civilian minister is currently not in keeping with the traditions of the Russian Army, and that he will not enjoy the same authority as a military minister. Sergey Yushenkov, the current chairman of the State Duma Defense Committee, is an implacable opponent of P. Grachev in this and other issues. But then we would ask this of him: Why doesn't he remove his shoulderboards, why is he still an active colonel? And why don't the thousands of other officers working in civilian institutions relinquish their ranks? Set the example, and then perhaps troop officers would start thinking differently.

But until then, as the article in KOMSOMOLSKAYA PRAVDA shows, military reform is more reminiscent of a smokescreen, under the cover of which the newspaper is boosting its own people to power.

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Closed Duma Session Extends Service Term

95UM0391A Moscow *SEGODNYA* in Russian
8 Apr 95 p 1

[Article by Pyotr Zhuravlyov, Aleksey Kirpichnikov: "Innovation: Hawks Win Hands Down, Gen. Kolesnikov Jeopardizes Conscription Plan"]

[FBIS Translated Text] The State Duma approved changes in and amendments to the Law on Compulsory Military Duty and Military Service on three readings at a half-hour closed session yesterday. Two hundred forty-five deputies voted to increase the term of conscripted service in the Russian Federation Armed Forces from one and a half to two years. The current term of service in the Navy, two years, remained unchanged. Another adopted amendment makes students subject to one year of conscription after completing their studies.

Graduates of higher schools with military departments will receive preferential treatment. Specifically, they will be allowed to conclude contracts, serve as sergeants, live in dormitories, and so on. Aleksandr Piskunov of the State Duma's Defense Committee said that officer ranks will be conferred on this category of young people after they complete one year in the Army, a practice that will replace the traditional training camps.

The new procedure will take effect this year. However, it will not affect the "spring" conscripts, to all appearances.

The procedure in which the amendments to the law on compulsory military duty were approved was unprecedented. A fear of public disclosure reached the height of idiocy. The trouble is not that the session was declared closed at the insistence of Chief of the General Staff Mikhail Kolesnikov (at one point the colonel-general, on the pretext that the information he was going to report was classified, threatened to leave the podium); that has happened before. Rather, the majority of the deputies did not even receive copies of the text of the changes they were making in the law, and the changes were approved "by ear." On all three readings, the factions of the Agrarian Party, the Russian Federation Communist Party, the Liberal Democratic Party of Russia (Zhirinovskiy's party), the New Regional Policy group, and the Stability group, as well as a sizable part of the Party of Russian Unity and Accord and the independent deputies, proved to have keen "hearing."

The document will now be sent to the Federation Council and the President, and after the new written military obligations take effect, the deputies will be able to compare them only with yesterday's oral obligations, something that could lead to further "changes and amendments." In the opinion of a number of Duma members, that is precisely why the law was adopted without its text having been distributed. The procedure of oral approval (and not the fear of divulging mythical classified information that is known to every novice spy) was, in fact, the main reason why the session was closed:

Under the glare of television cameras, the flagrant violation of procedural regulations would have appeared utterly shameless.

RF Reaction to NATO Expansion Seen as Inadequate

95UM0394A Moscow *SEGODNYA* in Russian
14 Apr 95 p 3

[Article by Pavel Podlesniy of the YuKOS Institute, under the rubric: "Polemics": "Moscow Has Capabilities To Minimize the Damage: Once Again on Russia's Reaction to the Expansion of NATO"]

[FBIS Translated Text] Active discussion of the issue of the anticipated expansion of NATO, its consequences for Russia's security interests in Europe and the prospects for the development of the military-political situation on the continent as a whole is not subsiding in Russia's political and scientific circles. This state of affairs is entirely explicable since this is a question of whether or not today the centuries-old geopolitical confrontation between the West and Russia will revive or if they will manage to prevent it, having found an appropriate place for Russia in the contemporary European security architecture. An analysis of the probability and scenarios of NATO's expansion and the political and other threats for Russia that are associated with this and its possible responses has become central in the elaboration of Russian security strategy. In the process, during the course of the discussion it appears that inadequate attention is being devoted to an examination of a number of very important aspects that affect NATO's movement to the East.

First of all, there is no mechanism whatsoever in the adoption of specific decisions on NATO's expansion. Even after some country, first of all from the vyshegradskiy four, could be proposed to enter the North Atlantic Alliance. Discussion of a series of issues associated with the advisability of NATO's expansion, its methods and the time frames for the selection of specific candidates is only beginning and it is impossible to exclude the fact that, to the extent of the realization of the entire sum total of the pluses and minuses of this process in the West, the number of those politicians, and especially military personnel, who even today are still skeptical with regard to the need to augment the alliance with new members could increase. A characteristic feature: at the meeting of the ministers of foreign affairs of the countries that participate in the European Union that took place on March 18-19, 1995 in the French city of Carcassonne, the Italian Minister Suzanna Anelli [transliterated], having expressed in principle support of the "institutionalization" of NATO's relations with Russia, nevertheless stressed that a fundamental decision on the expansion of the alliance is premature. It is impossible to exclude the fact that Russia's growing resistance to NATO's possible expansion will also promote a deeper realization by Western strategists of the damage of this

process for NATO itself, the prospects for its survival, and relations between the states that make up this alliance.

In the situation that is taking shape, either Russia's silent consent to NATO's expansion or its intention to exchange this consent for some or other "compensation" by the West would not only be premature but would not provide any strategic advantages whatsoever for Russia. The conversation itself on such compensation would only cover Moscow's forced consent to the expansion and become a diplomatic act to save face and no more. All the more so that certain demands on compensation which are being expressed by Russian experts are either knowingly unfulfilled or are, on the contrary, unjustifiably frivolous. Specifically, this pertains to the demand on not deploying nuclear weapons in the Central European countries. It is difficult to find a sensible politician or military person in the West who would want such a development of events, all the more so today when so much effort is being exerted to strengthen the nuclear weapons nonproliferation regime, including insuring the nonnuclear status of certain post-Soviet states. Moreover, it is unrealistic to demand in a counterproductive manner obligations from the West to not expand NATO into the Baltic states. This most likely could only spur the integration of these states into the structure of the North Atlantic Alliance and ultimately result in the appearance of a new line of tension in Russia-NATO relations.

One other form of compensation for the expansion is quite vulnerable—the "promise" or guarantee that is reinforced by a treaty that NATO is being transformed, that is, that the TsVE [Central East European] countries will enter an already "new NATO". But, first of all, the experience of past years has shown the quite limited possibilities for the transformation of NATO from a military into a political organization if it does not cease to exist in and of itself. It is impossible to ignore the admission of Western statesmen themselves that the main task consists of increasing NATO's influence and adapting it to the new historical realities in Europe, without eroding the main functions of the alliance. Actually, the idea of expansion has a single possible direction for the future transformation of NATO. Yes, it is true that NATO has played a stabilizing role in the relations between its members. But then again, no one is preventing it from accomplishing that task from now on even in its present state. Second, the European Union has had and continues to have an adequately perceptible stabilizing impact on the situation in Western Europe. With regard to the conflicts of the new generation in Europe, their settlement and prevention, be it in the Balkans or in the Transcaucasus, the role of the NATO structures has been more than modest at least until now.

A few words about the possibility of building "special" forms of cooperation between Russia and NATO, specifically by concluding a special treaty on strategic cooperation. However, with a more painstaking review, this

type of idea causes quite a few objections or, as a minimum, reflections. The NATO countries themselves have still not defined either the nature of the "special" form of relations or the scale of possible cooperation. But the main thing, the institutionalization of cooperation with Russia, is thought to be "parallel" to the process of NATO's expansion. But it is impossible to be a little bit pregnant or a little bit not pregnant in politics and diplomacy. Genuine cooperation of Russia and NATO is improbable under conditions of an expansion since practically all Russian analysts agree that expansion at best will not improve Russia's position and security and, at worst, will take the form of its political isolation and weakening of positions on the European continent and will reduce the Western countries' interest in maintaining a full-scale dialogue with Russia on many key issues of European security and stability.

It seems that in the situation that is taking shape Russia must avoid any extreme, that is, give a hasty "approval" to NATO's expansion or, on the contrary, set out on a path of new confrontation with the West that is quite impetuous and contradictory to the interests of its security and internal development. If the NATO states actually arrive at the conclusion to accept some one or several states into its ranks, Russia will find itself incapable of blocking that probable development of events. But this does not at all signify that it does not have any possibilities whatsoever to select a course to "minimize the damage" to its security in the event that a decision on the expansion of NATO becomes irreversible in nature. An understanding that there is no sense making "NATO-mania" the basis of its policy in Europe could be a starting point of that policy. For Russia right now the main thing is to concentrate on the defense of its long-term interests on the European continent, regardless of whether or not NATO expands. This concerns first of all the normalization of relations with the key countries of the CIS (Ukraine, Belarus, and Kazakhstan) and also the creation of the points of Russia's military, economic or other presence in the other states of the Commonwealth, first of all in the Transcaucasus. It is impossible not to see that the expansion of NATO causes anxiety among both many Ukrainian politicians and military personnel and that it is advisable to utilize it to offer joint or parallel opposition to the hasty expansion of the North Atlantic Alliance. Quite a bit can be done to restore economic, political and other ties with the countries of Eastern Europe and for the elimination of mutual concerns. And, finally, there is adequate room for argument about the fact that the expansion of NATO is hardly the only variant for the resolution of many European security issues. There are other somewhat more optimal variants, for example, expansion of the ES [European Union] and the ZES [Western European Union] which would not engender new schisms and would not lead to the acquisition of unilateral geopolitical advantages.

Potential Military Reforms: Comparing Foreign Experience

95UM0404A Moscow KRASNAYA ZVEZDA in Russian
19 Apr 95 p 2

[Article by Colonel Nikolay Khomchenko and Major Igor Biziuk, under the rubric: "Military Reform: Problems, Opinions": "Society: So, What Kind of Army Do We Need"]

[FBIS Translated Text] How do we want to see our Armed Forces and what do we need to do to implement the transformations that are planned in them? This is perhaps one of the main issues of military reform. In the polemical correspondence published below, its authors, officers of the RF Armed Forces General Staff, submit to the court of experts and society one of the problems of building the military organization of the Russian State.

You can hear different things about how military reform is being conducted in our country: from stirring pronouncements to destructive criticism. This is being said with malicious pleasure and mockery in some places and with chagrin and concern in other places. Obviously, we don't have to agree with everything but we also don't have to reject everything. Of course, as the most impartial judge, time will put everything in its place. But already today it is important to define at least the main reference points of the movement toward the planned goals.

The very structure of the state's military organization is the most important issue of military structural development (and military reform) of the state. But here, in our opinion, so far there have been quite a few different interpretations that impede its understanding and its resolution in practical life.

So, in the majority of contemporary countries, the armed forces, that consist of various services, highest organs of command and control, rear services and certain specific formations (for example, in the United States—the National Guard, in the PRC—security troops, etc.) are the basis of their military organization. That same structure existed in the Soviet Armed Forces where, besides the Army and the Navy, they consisted of the border, internal troops and civil defense troops (Article 4 of the Law of the USSR "On Universal Military Obligation").

It was divided into two components with the formation of Russia's military organization: the Armed Forces proper and other troops (military formations) which included border, internal, and civil defense troops (MChS [Ministry of Emergency Situations]), government communications, railroad troops, and also a multitude of other units and subunits, including various security and guard services.

Was there a need for that? Or is this one of those decisions that was made hastily, without adequate substantiation and in order to please some interests or other? Finally, what are the positive aspects of the reform process?

Let's attempt to investigate. But first, let's explain the content of the terms: "Armed Forces" [Vooruzhennyye Sily] and "other troops [drugie voyska] (military formations) [voinskiye formirovaniya]".

IF the concept "Armed Forces" has been defined in adequately thorough detail in existing encyclopedia publications and in the RF Law "On Defense" (Article 10), it is simply impossible to find the content of the concept "other troops". It does not exist either in official documents of the state or in other literature. But even while examining the semantic meaning of these words, you arrive at the conclusion: all of them are synonyms of the concept "Armed Forces" and have the most direct relation to them. Then where is the line that separates "other troops" from the "Armed Forces"?

The RF Law "On Defense" defined: military formations whose activities are not associated with the role of the Armed Forces (with the defense of the state—Author's comment) cannot be part of the Armed Forces (Article 11). But they can be involved in defense with the employment of weapons (Article 1). Consequently, all military formations that have been defined by this law and referred to as "other troops" are associated with the role of the Armed Forces and can form a part of them... As for their differences, they are only in the specific nature of the missions being accomplished. That is, the line that separates them is quite arbitrary. Judge for yourself. Both "other troops" are involved in the country's defense and the "Armed Forces" accomplish a portion of their functions (carry out the defense of the state border with the PVO Troops and reinforce Border Troops formations when necessary; render assistance to the population during natural disaster recovery jointly with MChS; are involved in combating bandit formations within the country in coordination with the MVD [Ministry of Internal Affairs]; and, conduct counterintelligence activity jointly with FSB [Federal Security Service] troops, etc.). That is, they have common and interrelated missions and also a single standard-legal base (a "military package" of laws), a personnel manning system, and the same type of weapons and military equipment.

So, the Armed Forces and "other troops" are essentially a single military organism of the state that has been artificially divided into parts at the present time.

We can only presume that this decision was made in order to please some sort of interests. Obviously, the political ambitions of a certain circle of officials played their role—to divide the Armed Forces into a multitude of parts in order to avoid what appeared to be "military coups" and an aspiration to artificially reduce the overall strength of the Armed Forces. The question is something else: what have we attained through this?

Alas, there's nothing to brag about here. Besides the delimitation of this organism of the state structure, the existing standard-legal base has not yielded clarity—why was this done? While defining the possibility of utilizing

"other troops" in the country's defense, the corresponding documents do not define either their duties or employment procedures. Thus, it's as if these formations fall out of the defense system of the state which in no way answers the tasks of military reform.

For example, it is understandable that the head of state (the President) is the Supreme Commander-in-Chief of the Armed Forces. But now the question arises: Who is the RF President to the troops who are not part of the Armed Forces? Or take the RF Armed Forces General Staff. It turns out that the primary organ of operational command and control of the issues of the defense of the state does not have the corresponding status with regard to the "other troops"... Already not mentioning the fact that social alienation among servicemen has increased with the appearance of the numerous power structures. It's no secret for anyone: social protection in those same PV [Border Troops], VV [Internal Troops], and FSB [Federal Security Service] is much higher than in the Armed Forces. Without minimizing the difficulties and tension of their service, it obviously is appropriate to say: the "earning" of these benefits and privileges occurs most often at the expense of servicemen of the Army and Navy. All of this ultimately does not promote the consolidation of the military organization of the state as a whole.

Alienation has become increasingly manifested between the force ministries and departments. Reform of the troops is being carried out according to their own plans, without close coordination with the missions of the country's defense and the tasks of military structural development. This significantly hampers the already complicated command and control of the troops as a whole (an example of that—is the absence of coordination between the Armed Forces and MVD units that occurred during the course of events in Chechnya) and is leading to isolation in the realization of joint plans and programs for the operational preparation of the country's territory (the development of military infrastructure) and is giving rise to quite a few controversial interdepartmental issues and much time is being spent to resolve these issues. And the number of these problems is increasing. What can all of this lead to?

A definite increase of those same internal troops occurred WITH THE REDUCTION of the Army and Navy. And with the division of the Armed Forces into a multitude of

military structures—their dismemberment into smaller structures also took place. For example, the KGB troops were divided into border troops (FPS [Federal Border Service]), government communications (FAPSI [Federal Government Communications and Information Agency]), military formations of the protection service (GUO [Main Protection Directorate]) and foreign intelligence (SVR [Foreign Intelligence Service]), although all accomplished one interrelated mission. Parallel to this, a large number of independent militarized guard and security services of various companies and organizations is being created that are poorly controlled, the basis of which is made up of former military professionals...

The creation of a so-called national guard is being increasingly proposed. In the process, the latter should unite the armed formations (internal troops, MChS troops, etc.), that have been dispersed through the departments, under a single command authority and assume responsibility for those functions that the army does not assume (associated with internal problems). At first glance, there is a grain of truth in this. But this does not resolve all of the problems from the point of view of normalizing the military structure of the state because it will sooner transform the guard itself into a conglomeration of various units of the ministries and departments (MVD, MChS, GUO, and so forth).

Finally, the process of the revival of the Cossacks is increasingly occurring. And we also have to somehow deal with this, while taking into account the unique native experience of the development of this type of irregular troops.

Everything that has been listed above demonstrates the objective need of unifying the military structures of the state into a single organization—the Armed Forces. The experience of military structural development in other countries confirms the advisability of that (See the table). As is evident from it, in the majority of states, the armed forces consist not of regular units alone but also of other military formations. As for Russia, the traditions of the development of unified Armed Forces have significantly deeper roots than the creation of the Soviet Armed Forces. Today, this has been caused, furthermore, by the economic advisability and by the normalization of the system of planning and command and control of the issues of the defense of the state and also by reinforcing the stability of society.

The Structure of the Armed Forces of the World's States

Country	Armed Forces	
	Regular Forces	Irregular Forces
United States	Army, Air Force, Navy, Reserve	National Guard
Great Britain	Army, Air Force, Navy	Territorial Troops*
France	Strategic Forces, Army, Air Force, Navy, Reserve	military gendarmerie (armed police force)
Netherlands	Army, Air Force, Navy	Civil Defense Troops*, military militia
Denmark	Army, Air Force, Navy	Elite Homeland Troops ("Hemveri" [transliterated])
Greece	Army, Air Force, Navy	gendarmerie, national guard*, coastal defense
Turkey	Army, Air Force, Navy	gendarmerie
FRG [Federal Republic of Germany]	Army, Air Force, Navy	territorial troops*
PRC	CPLA [Chinese People's Liberation Army] (Strategic Missile Forces, Army, Air Force, Navy)	popular militia, popular armed militia
Egypt	Army, Air Defense, Air Force, Navy (Reserve)	(special) troops, border troops, territorial troops, security troops, civil defense
Israel	Army, Air Force, Navy, Air Defense	NOKHAL [transliterated] territorial defense troops, civil defense, border defense
Algeria	Army, Air Force and Air Defense, Navy	national gendarmerie, border troops, workers militia
Poland	Army, Air Force and Air Defense, Navy, Navy	border defense troops**, militia formations** (includes MVD [Ministry of Internal Affairs]), regional defense troops
Sweden	Army, Air Force, Navy	territorial troops*
Saudi Arabia	Army, Air Force, Air Defense, Navy	national guard
Vietnam	Army, Air Force, Navy, Air Defense	MVD troops (internal defense troops, border troops) people's untrained volunteer military force
Kuwait	Army, Air Force, Navy	national guard, emir's guard

* part of the Army

** included in wartime

In the situation that has developed, in our opinion it is necessary in the near future to return to a single military organization of the state, having included in it all of the existing military structures. This does not signify that the current Army and Navy will absorb the "other troops", having been transformed into a military "monster". No. They must become part of the Armed Forces not on a permanent, but on a temporary basis (under definite conditions), as it was before and only to accomplish missions for the defense of the state.

We need to create a common system of command and control of the Armed Forces, having precisely defined the procedures for coordination and subordination of all structures. In the process, the General Staff of the Armed Forces must become that single highest organ of military command and control for issues of the defense of the state, for which we need to impart the appropriate status to it and, obviously, more precisely differentiate powers and responsibility with the Ministry of Defense. All of

the currently existing troops and military formations (on the issues of their planning and employment in support of defense) must be tied to the General Staff and its orders and directives that concern these issues are subject to total execution.

The existing standard-legal base that affects the structure of the military organization of the state and the duties of the components of the Armed Forces for the country's defense and also the procedures for their transition to common jurisdiction will require revision.

ANY reform, including military, requires a profound theoretical foundation, and its implementation—a clear plan, timely assessment of intermediate results, a rational degree of openness and, if necessary, correction of erroneous postulates. Only then will it be successful and its implementation—less painful for society and for the Army itself.

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Yeltsin's Support for Expanded Conscription Protested

MM1804102595 Moscow IZVESTIYA in Russian
18 Apr 95 p 1

[Letter to President from members of the Russian Federation president's public chamber: "Army of Russian Generals Lacks Privates"—first two paragraphs are IZVESTIYA introduction]

[FBIS Translated Text] The law adopted by the State Duma on increasing the term of service in the Army and the draft of higher educational establishment graduates into the armed forces has not yet been approved by the Federation Council. Having said that this law is still a long way from being signed, the Russian President has nonetheless in fact expressed himself in support of it. Answering questions from an ITAR-TASS correspondent, Boris Yeltsin noted that the increase in the duration of service is explained by the catastrophic shortage of draftees. In the president's opinion "the very complex combat equipment demands highly educated and well trained specialists" and "for that 18 months is not enough."

Figures of science, education, and culture, whose letter addressed to the President IZVESTIYA publishes today, have voiced their attitude toward this law.

Figures of science, education, and culture are alarmed at the growth of aggressive trends, the propaganda of nationalist ideology, and the impunity with which certain circles are introducing into young people's awareness the cult of violence and the predominance of one ethnic group over another and some people, speculating on the Caucasus events, are playing the so-called "Chechen card."

In this very complex situation the State Duma, in contravention of standing orders, logic, and common sense, adopts in 30 minutes, on hearsay, the federal law "on the introduction of changes and additions to the Russian Federation law 'on military service obligation and military service.'"

First, its adoption means a drastic rise in social tension in the country because it has been received by young people in a unanimously negative manner. And many students, undergoing a course of training and then losing all the skills they have acquired after a year's service as soldiers, do not return to the professions they acquired with such difficulty.

Second, it strikes a very powerful blow against the sphere of science, education, and culture. In 1994 alone after a considerable decline in interest in higher education, did an influx of young people to the higher education establishments begin. The new law jeopardizes this positive trend in our development when it has scarcely begun. The most creatively talented young people are being drafted into the army without any exceptions! That did not happen even in the hard times of the Patriotic War.

It is clearly to the higher military command's advantage to have a large army, not a reform of the army. It is perfectly obvious that many young men, when this law is implemented, will try to avoid serving the Fatherland and will seek to leave Russia and student riots are not out of the question.

The political and economic situation in Russia, the Chechen tragedy, and the election struggle which has already been joined by factions, parties, and movements—all this is gradually being drawn into a tight knot of problems, preventing the voices of ordinary public citizens from being heard. Even the Russian Federation president's public chamber created for constructive dialogue between the authorities and the public meets increasingly rarely and the proposals and recommendations of the chamber's members often fail to reach the president.

For the sake of Russia's future we ask you, most esteemed president, immediately to convene the public chamber to discuss and elaborate proposals and recommendations on the question of the army's reform and the fulfillment of article 59 of the Russian Federation Constitution and on problems of the draft and not to approve the federal law "on the introduction of changes to the Russian Federation law 'on military service obligation and military service.'" Its consequences for the country could be catastrophic.

[Signed] Members of the Russian Federation President's Public Chamber:

A. Gelman, secretary of the Union of Theatrical Figures; A.K. Krasilnikov, first secretary of the Board of the Russian Writers' Trade Union; V. Matrosov, president of the Association of Pedagogical Education; B. Mitin, president of the Association of Engineering Education; N. Nebylitskaya, president of the Association of Russian Intelligentsia and member of the Council of the All-Russian Guild of Script Writers; M. Paltsev, president of the Association of Medical and Pharmaceutical Education; V. Sadovnichiy, president of the Russian Union of Rectors; V. Savinykh, president of the Association of Russian Higher Educational Establishments; V. Spesivtsev, artistic leader of the Experimental Theater; I. Fedorov, chairman of the Moscow City Council of Rectors; M. Khutsiyev, president of the United All-Russian Guild of Russian Movie Producers; A. Belov, president of the Association of Agricultural Higher Education Establishments; V. Romanov, chairman of the St. Petersburg City Council of Rectors.

Talks on Russian-Romanian Military Cooperation

95UM0384B Moscow KRASNAYA ZVEZDA
in Russian 7 Apr 95 p 1

[Article by Yelena Surovtseva: "Moscow and Bucharest Are Continuing Their Dialogue in the Military Area"]

[FBIS Translated Text] The talks with Gen of the Army Pavel Grachev, Minister of Defense of the Russian Federation, with Romanian Minister of Defense Georgiy

Tinka, who had come to Moscow on an official visit, lasted almost an hour more than the planned time. In speaking of the reason for this delay, the Russian minister of defense reported to journalists that the Romanian military delegation came to Moscow not with empty hands but rather with a whole package of proposals on military-technical cooperation. All of the proposals of the Romanian side were accepted and will be worked through in the near future for the purpose of their practical implementation.

Named among the basic directions in the deepening of Russian-Romanian military-technical cooperation were, in particular, reciprocal deliveries of equipment, armaments, and spare parts, the sending of Russian military specialists to provide assistance in the repair of combat equipment, the holding of joint exercises, the training of Romanian servicemen in military educational institutions of Russia and vice versa, and also the preparation and issue of maps of different scale.

Despite the shortage of time, the talks also covered problems involved in general European security. According to Pavel Grachev, Russia's approach to them remains unchanged: the basis for the system of European security may be the OSCE as the coordinating organization with the simultaneous existence of all other international organizations—EU, NATO, and others.

The minister of defense of Romania, in turn, set forth the position of his country with respect to its possible joining of NATO. The striving of Romania to become a full member of NATO, in the words of Mr Tinka, is in no way directed against Russia, with which Romania intends to continue to develop equal and mutually advantageous relations in all areas. In this respect, Mr George Tinka characterized the negotiations with Russian Minister of Defense Gen of the Army Pavel Grachev as exceptionally successful and promising.

DOCTRINAL ISSUES

Gareyev: Utility of History in Planning Modern Operations

95UM0403A Moscow KRASNAYA ZVEZDA in Russian
20 Apr 95 pp 2-3

[Article by General of the Army Makhmut Gareyev: "Experience of Past Wars Has Not Lost Its Value"]

[FBIS Translated Text] "The Experience of Wars and the Training of the Armed Forces at the Current Stage"—such is the name of a scientific conference that the Academy of Military Sciences will hold on April 22. The measure is one of the first intended to give substance to the further reform of our Army. The subject of the conference is especially timely in connection with the approaching celebration of the 50th anniversary of victory in the Great Patriotic War. But it is also interesting in connection with the extensive discussion of the course of the fighting in Chechnya.

General of the Army Makhmut Akhmetovich Gareyev, president of the Academy of Military Sciences, shares his thoughts on this matter on the eve of the upcoming discussion.

There have been many times in history when, after some latest war, attempts have been made to portray the situation in such a way as though nothing remained of previous military art. Nevertheless, each subsequent war, although it does give rise to new techniques of waging armed struggle, has preserved a good deal of the previous techniques. At any rate, there has yet to be a war in history that has completely cancelled out everything that military art amassed before it.

Needless to say, many operational-tactical normatives and methods of organizing and conducting combat operations that were used in the past are not suitable for modern, much less future, warfare. For this reason, under no circumstances can past experience be turned into a kind of template. There was a time, for example, when people criticized the experience of the 1930 Spanish war, since on the basis of that experience, rash decisions were made to eliminate tank corps and on certain other matters. But the problem here is not the experience per se of the Spanish, Afghan, or, for instance, Chechen wars, but the incorrect and ill-considered conclusions drawn from it.

Some commanders are now repeating the mistakes of the old postwar generation of leaders. The latter were "not allowed" to take a critical look at certain unsuccessful operations in 1941 and 1942. And in order to make everything look well, they took the path of embellishing our forces' operations. As a result, it was impossible to identify the true reasons for the mistakes that were made in conducting operations, to offer a truly objective evaluation of them, and to draw proper lessons from combat experience. Such a danger exists today as well.

The problem of Armed Forces training has always been linked with efforts to solve a two-fold problem. First, it is important to correctly foresee the possible character and techniques of the conduct of a future war and, in keeping with this, to determine the content of troop training. Second, it is essential to determine how troops must be trained—i.e., to search for training methods and techniques that will make it possible to realize current views on methods of warfare in practice.

What fundamental changes in the military art should determine the content of the Armed Forces' training?

First and foremost, in my view, we must take into account the fact that in addition to the capability to accomplish combat missions in a large-scale war, we must now devote paramount attention to training troops for involvement in local and regional conflicts.

The most important change in the nature of war is the change in the role of nuclear weapons, which, as they are

being reduced, are ceasing to be a battlefield weapon. They are becoming a means of strategic deterrence. Therefore, the main emphasis in operational and combat training must be placed on training for combat operations in which conventional weapons will be used, but in which there is still a threat of the use of nuclear weapons.

The relationship between so-called "direct" and "indirect" operations is changing. "Indirect" actions having to do with bringing political, economic, and psychological influence to bear on the enemy and techniques of feeding him disinformation and undermining him from within have always played a great role. But in periods when the idea of total war held sway, direct, head-on, and bloody battles often became an end in themselves, relegating all other techniques to the background. In present-day conditions, however, with the lessening of global confrontation, the role of the aforementioned "indirect" operations is growing substantially.

In general, the question is one of more flexible military art, of making fuller use of the great variety of means and techniques of putting pressure on the enemy, of combining offensive, defensive, and other operations, of the ability to use stratagem and unexpected troop maneuvers, to circumvent the strongest centers of resistance, and to conduct frontal attacks (when they are inevitable) after dependable fire suppression of the opposing side. It is characteristic that people who fought in Chechnya are now saying that in a number of instances, they lacked just these kinds of flexible operating techniques.

Of the three most important elements of battle—fire, strike, and maneuver—we are seeing a sharp increase in the importance of fire, which must reliably lay the groundwork for a strike without forcing troops, at the cost of great losses, as in the past, to overcome the enemy. The primary missions in defeating the enemy will be accomplished not in the course of clashes between forward units, but through fire from afar. As a result, all battles will take on a dispersed character, encompassing all spheres of military operations in terms of fronts, depth, and altitude.

The planning and conduct of modern operations encompasses a wide range of diverse operational-tactical, military-technical, and specialized issues: putting forces at various levels of military preparedness, carrying out marches and movements, conducting various types of combat operations (defense, offense, encounter battles, river-crossings, urban fighting, mountain fighting), carrying out peacekeeping functions in conflict areas, and much more. It is impossible to work through all these issues in one or two exercises or training missions. It is essential to hold a whole series of interrelated training measures that must be properly and consistently planned in the course of organizing operational and combat training, so as to avoid repeated training in some areas while other matters are totally ignored (for example, the mastering of techniques of conducting military operations in cities, at night, and in other special conditions).

Of course, it is difficult and impossible to hold the required number of training measures at a time of insufficient funding and insufficient supplies and equipment. Hence it is all the more important to incorporate the review of various matters in every exercise held. Even at command and staff exercises, which involve only designated units, it is possible and necessary to carry out the entire range of planned measures with respect to preparation for battle: to organize and conduct practical reconnaissance, to prepare terrain in engineering terms, to amass supplies, to carry out the required equipment maintenance, and so on.

A great deal is being written and said today about unskillful actions on the part of certain commanders in Chechnya and about the unpreparedness of various units to accomplish their combat missions. And for the sake of fairness, it must be said that this is not the first time we have encountered this phenomenon. Even in periods when our forces engaged in systematic combat training, in every instance—in the Soviet-Finnish war, in 1941, on Damanskiy, in Afghanistan, and in a number of other instances—for some reason we have found ourselves unprepared for the very first battles at the outset of war. Then, after two or three weeks (as in Chechnya, for example), most officers and soldiers begin to perform significantly better.

When certain politicians and journalists bemoan the sending of unexperienced young soldiers into battle, one can't help recalling that we have high-ranking generals who, throughout their careers and lives, have not only never been under fire, but have never spent a single night in an open field. If we really want to draw lessons from past experience, we must continually think of ways to bring training closer to the reality of combat.

In 1944, before the start of the Belarussian operation, I saw how General I. Chernyakhovskiy went about his work in the 184th Rifle Division, under Major General B. Gorodovikov. He did not hold the lengthy discussions that are often held in our exercises to sort out questions that do not have a direct bearing on the situation. Instead of those detailed discussions, Ivan Danilovich carefully studied the map (silently and in deep concentration), after which he asked a few questions: Where precisely is the enemy's forward line located, where exactly are the artillery switching lines in the attack, how long will it take to move tanks out of their initial positions, where might the enemy launch counterstrikes, and what men and materiel are available to repulse them? After hearing the answers, he quickly and precisely clarified the procedure for accomplishing certain missions. When working at an observation post, he asked to be shown the locations where breaches had been made in the enemy's minefields and to be told how they were to be surmounted. He compared the planned artillery fire on the maps of the rifle division and artillery division commanding officers. On finding an inaccuracy, he ordered the division commanding officer to verify all the maps of the rifle and artillery subunit

commanders. He gave the order to fire two rounds at one of the prepared fire sectors. On arriving at the staging area of the tanks that would provide direct support to the infantry, he listened to a brief report from the officers of the frontline tank maintenance service on the tanks' preparedness for battle. And after that he ordered the company commander and the mechanic-driver of the lead tank to drive him along the route that the infantry support tanks would use to advance. On reaching the deployment line and making sure that the company commander knew the lanes in his minefields, he went to the gun positions of the regiment artillery group.

In general, primary attention was devoted to the extent to which the enemy's guns had been reconnoitered and to the precision with which artillery fire and aviation strikes were trained on them, a factor of decisive importance to the attack's success. There were no lengthy verbal explanations. Everything was verified only in actual practice. Anyone to blame for problems or mistakes in planning combat operations was held strictly accountable.

Historical experience convincingly proves that no matter how well troops are prepared, they must receive special training in accomplishing the specific combat missions that lie ahead before they are sent into battle. And so statements like the one, for example, that was made in a report from Chechnya on the television program "Wrap-Up" on March 17 appear amateurish. Describing the training that had been arranged for subunits withdrawn from the fighting, the reporter categorically stated: "Combat training exercises in a combat situation are, of course, nonsense."

We know how Suvorov prepared his troops for the storming of Izmail, or Brusilov for the breach of the defensive line in 1916. In the Great Patriotic War, especially in the second and third periods, numerous training sessions were held before each new operation, along with exercises in terrain similar to that in which the troops would be operating: the enemy's defensive sectors were reproduced in our forces' rear areas in all their details, and models were made of the fortifications that would have to be taken.

Consider, for example, the 1945 Manchurian offensive operation. It was to begin with a surprise crossing of the state border without artillery softening up. Special attention was devoted to the preparation of the lead divisions. The way in which the divisions were to stealthily advance and cross the border, with support from groups of border guards who knew the terrain in minute detail, were reviewed with the officers on maps and models of the terrain at length and with meticulous care, as were the techniques to be used in overcoming obstacles, destroying defenses and capturing permanent structures with the element of surprise and the order of operations by the main forces.

Training fields that recreated the Japanese forces' strong points, with all their obstacles, permanent gun emplacements, and protective and defensive systems were created in every division. A week was spent holding tactical-operational exercises on these training fields, rehearsing the most difficult combat techniques over and over and working out the way units from various service arms would work together.

Then, over the course of 10 to 12 days, five or six comprehensive exercises involving all men and materiel were held (most of them at night). In particular, the division and regiment commanders and staffs participated in each such exercise, along with the commanders and staffs of the division and regimental artillery groups, the air support controllers, all the men of the lead divisions with all their reinforcing weapons, and the border guard groups. Special attention was devoted to strictly following the routes of advance and attack in darkness, the achievement of stealth and surprise in capturing primary targets in the enemy's defenses, the skillful control of units in battle, the system for calling in artillery fire and supporting aviation, the repulsing of possible enemy counterattacks, and the timely development of successes by the main forces of the assault echelon regiments. In conclusion, each division held a control exercise under the direction of the army commander, during which final adjustments were made and all matters relating to the organization and conduct of the combat operations were checked.

Such careful preparation of troops, especially lead divisions, before the start of an operation, in conjunction with other well-known factors, ensured the combat operations' complete success and subsequently made it possible to defeat the Japanese occupation army in a short period of time.

The experience of the Great Patriotic War shows how important it is to heed the wise advice of Marshal G.K. Zhukov, who insisted that no matter how great the political or other pressure might be, under no circumstances can one mount an operation that has not been prepared.

Consequently, attitudes toward combat training have always been the main indicator of how well a given army is really prepared to accomplish its assigned missions. The entire system of operational and combat training achieves its objective only if it prevents any latent considerations of peacetime from leading it away from the sole true path that, in times of trouble, the Army must take to war.

STRATEGIC DETERRENT FORCES

TV Report on Strategic Missile Troops

LD1604193795 Moscow Russian Television Network
in Russian 1600 GMT 16 Apr 95

[FBIS Translated Text] Today is Science Day. It is no secret that recent years have not been the easiest for our scientists. But if there is still something left for them to

be proud about, it is the way their knowledge is being used in the military sphere, in the missile forces, for example.

[Correspondent R. Babayan] Russia's strategic missile forces today comprises 1,603 carriers and about 7,000 weapons—a short list, but enough to destroy the earth forty times. This whole nuclear capability is divided into four missile armies, each of which is equipped with a certain number of missile systems, which are in turn divided into stationary and mobile categories. In the first group are missiles based in the so-called special silos. There is a command station 32 meters under the ground which you get to using a lift. The command station and the missile itself are well-protected by fortified concrete constructions. The "Topol" installations, the military railway systems, and strategic aviation come under the mobile category. In accordance with the START-I Treaty, Russia's strategic missile forces are today on military alert with the so-called "zero target," but if need be, the necessary target coordinates can be tapped into the electronic unit for the missile systems in a very short period of time.

On screen is the Topol missile system; you are looking at one of the permanent bases, not far from Irkutsk. The Topol can leave the (?kron) only with permission from Russia's general staff and after the United States has been informed. This is one of the clauses of the START-I Treaty. [video shows trucks bringing missiles out of garages above ground]

On the surface, this composition looks like any other. But this is not the case; you are looking at the military railway missile system. The fact that the train can go 80 kilometers an hour and look from the outside like ordinary railway refrigerator wagons makes it practically impossible for the opponent's missiles and tracking technology to find it. This whole territory is well-guarded. It has four security levels. The military railway missile system uses the same routes as the Ministry for Railways and also has its own special routes. But these systems have been immobile since 1992 and START-I. The specialists say that none of the world's nuclear powers has a missile system like this. A U.S. inspection group was here a week ago. The Americans do not hide their wish that the reductions treaty apply to our military railway missile system, but Defense Minister Pavel Grachev has said that Russia would not allow this, given NATO's current expansion to the east. [Video shows extensive footage of the whole site, inside and out]

GROUND TROOPS

Specifications of BTR-80A

95UM0393B Moscow KRASNAYA ZVEZDA
in Russian 15 Apr 95 p 6

[Article by Andrey Garavskiy: "Arsenal: The Buynny, Dependable Friend of Infantry"]

[FBIS Translated Text] The BTR-80A, the latest in the family of Russian-made armored personnel carriers, was placed in service in May 1994.

The BTR-80A is designed to carry personnel for Ground Troops motorized infantry units, as well as personnel for naval infantry units, the Border Troops, and the Ministry of Internal Affairs Internal Troops, and to support combat operations by them. The new vehicle is based on the BTR-80 but has a number of features that favorably distinguish it from the latter.

First and foremost, a 30-mm 2A72 automatic gun has been mounted on the BTR-80A's turret, outside the personnel compartment. This formidable weapon increases the vehicle's combat efficiency by 50 to 100 percent (compared to the BTR-80). In addition, its external mounting makes it possible to significantly improve conditions for the crew.

The BTR-80A has also been equipped with the TPNZ-42 night sighting device for the first time (with a visibility of at least 900 meters in active mode). The vehicle's powerplant uses a YaMZ-238M engine, produced by the Yaroslavl Machinery Plant, instead of Kama plant engines (which were designed for freight trucks). In combat operations in Chechnya, the Yaroslavl plant engine proved to be the most dependable.

All these qualities favorably distinguish the BTR-80A, which is produced by the Arzamas Machinery Manufacturing Plant Joint-Stock Company, and make it a reliable friend of the infantry.

Incidentally, it has a brother—the BTR-80S, which differs only in terms of armament: It has a 14.5-mm PKVT machine-gun instead of a 2A72 gun.

The experimental design project to develop the armored personnel carrier was called Buynost [Fury], a name quite justified by its results: A pair of worthy "brothers" were produced. This is borne out by the fact that the first shipment of five BTR-80As was sent to the president's Chief Security Administration.

Tactical-Technical Specifications of the BTR-80A

Total weight, kilograms	14,400
Armament	30-mm 2A72 automatic gun (ammunition: 300 rounds in two straps of 150 each; one contains armor-piercing tracer rounds, the other fragmentation-high explosive and fragmentation-tracer rounds); 7-62-mm PKT machine-gun (2,000 shells in a single strap)
Aiming angle in vertical plane, in degrees	from -5 to 70
Aiming angle in horizontal plane, in degrees	360
Aimed fire range from gun for surface targets, in meters	up to 2,000
Aimed fire range from gun for airborne targets, in meters	up to 2,500
Ground clearance, mm	475
Maximum highway speed, kph	80
Maximum speed afloat	9
Crew	10

AIR, AIR DEFENSE FORCES

Comparison of U.S. vs Russian Military Aviation

95UM0400B Moscow AVIATSIYA I KOSMONAVTIKA
in Russian III, Nov-Dec 1994 pp 1-3

[Article by Vladimir Ilin: "Russian and U.S. Military Aviation: Current Status and Immediate Prospects"]

[FBIS Translated Text] Until recently, information about the qualitative and quantitative composition of domestic military aviation was considered Top Secret, and reports published in the West on this topic were conjectural, often temporary in nature and, as a rule,

corresponded little to reality. However, in 1993-1994, articles began appearing on the pages of the open domestic and foreign press, making it possible to judge more objectively what kind of combat aircraft Russia has and in what numbers. Detailed information was presented about the composition of our aircraft fleet and also of the U.S. Air Force and Navy (before, only data on the approximate total number of aircraft and helicopters and also on the number of aircraft of some or other type ordered from industry were published in the West). Thus, today it is possible for us to compare the aviation numerical strength of Russian and the United States—the countries possessing the most powerful air fleets in the world.

Composition of Russian and U.S. Air Force and Air Defense Aviation

Russia		United States	
Strategic Bombers			
Tu-95K/K-22	43	B-52H	135
Tu-95MS	27	B-2B	6
Tu-160	4	B-1B	95
Total:	74		236
Long-Range Bombers			
Tu-16	30		-
Tu-22	65		-
Tu-22M	100		-
Total:	195		0
Frontal (Tactical) Fighters*			
MiG-23	400	F-15C/D	401
MiG-25	21	F-15A/B	179
MiG-29	430	F-16A/B	400
MiG-31	30	F-16C/D	1,247
Su-27	150		-
Total:	1,031		2,227

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Composition of Russian and U.S. Air Force and Air Defense Aviation (Continued)

Russia		United States	
Air Defense Fighter-Interceptors			
MiG-23	676		-
MiG-25	174		-
MiG-31	300		-
Su-27	200		-
Total:	1,350		0
Frontal (Tactical) Strike Aircraft*			
MiG-27	400	F-111	84
Su-17	120	F-117	54
Su-24	480	A-10A	301
Su-25	192	OA-10A	89
	-	F-15E	201
Total:	1,192		729
Reconnaissance and ECM Aircraft*			
An-12	125	F-4G/RF-4C	105
An-26	100	EF-111	40
An-30	20	EC-18	6
Il-20/22	20	EC-130	23
MiG-25RB	85	EC-135	21
Su-17	50	RC-135	19
Su-24MR	90	E-8	2
Tu-16	70	U-2	20
Tu-22	30		-
Yak-28	40		-
Total:	630		236
Radar Early-Warning Aircraft			
Tu-126	10	E-3	34
A-50	15		-
Total:	25		34
Tanker Aircraft*			
3MS-2	10	KC-10A	59
Il-78	20	KC-135	551
Tu-16	20	HC-130	6
Total:	50		616
"First-Line" Military-Transport Aircraft			
An-12	350	C-130	507
An-22	45	C-17	11
An-124	26	C-5	94
Il-76	297	C-140	293
Total:	718		905

*For the U.S. Air Force as a part of line units, the Reserve, and National Guard.

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Composition of Russian and U.S. Air Force and Air Defense Aviation (Continued)

Russia		United States	
Military-Transport and Auxiliary Aircraft			
An-2	300	C-9A	23
An-24/26	100	C-12	84
An-32	50	C-18	1
An-72/74	20	C-20	13
An-225	1	C-21	82
L-410VP	150	C-22	4
Tu-134/154	20	C-23	3
Yak-40	25	C-25	2
	-	C-26	29
	-	C-27	10
	-	C-135	10
	-	C-137	7
Total:	666		268

Note: Materials published in the open press were used in compiling the tables.

Thus, by the end of 1993, Russia's Air Force and Air Defense Troops had at their disposal 3,542 combat aircraft, while the American Air Force (including Reserve units) and also the National Guard had approximately 3,194 combat aircraft. Russia, lagging behind the United States in number of strategic aviation aircraft, surpassed the American Air Force in tactical bombers. However, one should take into account the fact that American air wings equipped with Lockheed F-16 fighters can also be used to accomplish strike missions (a significant number of these aircraft are already equipped with LANTIRN system pods, supporting low-altitude flight and precision bombing, day or night). The Russian Air Force has nothing similar to the Lockheed F-111A [Translator note: obviously should be F-117A, but given as F-111A in text.] stealth bomber, which demonstrated high combat effectiveness during Operation Desert Storm. At the same time, 480 Su-24M frontal bombers, capable of performing low-altitude terrain-following flight in the automatic mode and armed with high-precision weapons, represent a quite menacing force, which the United States can oppose with only 84 F-111E/F tactical bombers (it is planned to remove them from service before 1996 for financial considerations) and 201 F-15E heavy multirole fighters with the LANTIRN system.

The Russian Air Force's advantage in frontal reconnaissance aviation is even more noticeable. Whereas the United States has several dozen obsolete McDonnell Douglas RF-4G reconnaissance aircraft, in 1993 Russia had 265 frontal reconnaissance aircraft, including 90 of the newest Su-24MR aircraft, unlike anything in the U.S. Air Force.

However, it is apparent from the figures cited that Russia lags behind the United States in the potential of its military transport aviation. Whereas America possesses 94 Lockheed C-5 Galaxy "super-heavy transports," we have only 26 "Ruslan" aircraft with which to

oppose them. We have lagged even further behind in tanker aircraft: compared with 616 "flying tankers" providing American strategic and tactical aviation truly global mobility, in 1993 Russia possessed 50 aircraft of this class, only 20 of which (Il-78) could be considered modern. It should be taken into account that all American combat, reconnaissance, and heavy military transport aircraft are equipped with aerial refueling receptacles, while only the Su-24M bombers and Su-24MR reconnaissance aircraft in Russian frontal aviation have similar equipment.

Just what are the prospects of a change in the composition of the military aviation of Russia and the United States in the near future? As is apparent from statements by representatives of the Russian Air Force, over the course of several years it is planned to remove all single-engine aircraft (MiG-23, MiG-27, Su-17) from the order of battle of frontal aviation. By the mid-1990's, the Air Force and Air Defense Aviation should have only fourth-generation fighters left—430 MiG-29, about 400 Su-27 and Su-30, and also more than 300 MiG-31 aircraft. Obviously, 480 Su-24M bombers and about 200 Su-25 ground-attack aircraft will remain a part of strike aviation, that is, Russia will have at its disposal more than 1,800 modern types of tactical combat aircraft.

By the mid-1990's, the Americans will also reduce the composition of their aviation considerably, decreasing the number of tactical air wings (including Reserve and National Guard air wings) to 20, which will correspond to approximately 1,300-1,800 combat aircraft. The F-15C/D fighters, F-16C/D fighter-bombers (a considerable number of which will be equipped with the LANTIRN system), multirole F-15E fighters, stealth F-117A tactical bombers, presently being upgraded, and also approximately 200 Fairchild A-10 ground-attack aircraft

will remain in service. Thus, both Russian and American tactical aviation will have at their disposal approximately the same number of combat aircraft built in the 1970's-1990's and possessing close combat capabilities.

In the second half of the 1990's, the Russian frontal aviation fleet is to be reinforced with multirole Su-35 fighters, Su-34 bombers (which will begin to replace the Su-24 aircraft), and also improved Su-25TM ground-attack aircraft. Air defense aviation is to receive the new MiG-31M fighter-interceptor. However, the prospects of renewing the Russian aviation fleet will largely depend on financing. In the U.S. Air Force during this period, it is planned to conduct work to modernize earlier built combat aircraft. In particular, the onboard radar will be improved on 150 F-15C/D fighters, some of the F-15C and F-16C aircraft will be armed with HARM AGM-88 anti-radar missiles, and additional avionics. It is possible that purchases of F-16C and F-15E fighters will continue. Deliveries of new types of combat aircraft are not envisioned for the U.S. Air Force in the second half of the 1990's.

Finally, early in the next decade, the American Air Force will receive the first fifth-generation fighters—the

Lockheed F-22A. A new multirole fighter and also a medium bomber are to appear in the Russian Air Force during this same time.

Whereas the correlation of forces of Russian and U.S. aviation intended for operations in land theaters of military operations is characterized by a certain equality, America retains absolute superiority in the area of naval aviation. Today, Russia has at its disposal only two aircraft-carrying ships (the TAKR [heavy aircraft-carrying cruiser] "Admiral of the Fleet of the Soviet Union Kuznetsov" and "Admiral of the Fleet of the Soviet Union Gorshkov"), one of which is capable of carrying horizontal-takeoff-and-landing aircraft whose combat capabilities correspond to American carrier-based aircraft. The U.S. Navy has 13 attack aircraft carriers (by the end of the decade, their number will be reduced to 12), the majority of which are equipped with nuclear power plants. In the late 1990's, the new McDonnell Douglas F/A-18E/F carrier-based fighter will enter service. The Grumman F-14 Tomcat fighter-interceptors will undergo a modernization, being given bombing armament to supplement the air-to-air missiles. No other serious qualitative changes in the American naval aviation aircraft fleet are foreseen in the foreseeable future.

Composition of Russian and U.S. Naval Aviation (as of end of 1993)

Russia		United States	
Carrier-Based Fighters and Ground-Attack Aircraft			
Su-33	48	F/A-18A/B	271
Yak-38	15	F/A-18A/B	275
	-	F-14A	345
	-	F-14D	27
	-	A-6E	318
Total:	63		1,236
Marine Aviation Combat Aircraft			
	-	F/A-18A/C/D	312
	-	A-4M	24
	-	AV-8B/TAV-8B	173
Total:	0		509
Shore-Based Missile-Carrying Bombers			
Tu-16	15		-
Tu-22K	15		-
Tu-22M	165		-
Total:	195		0
Shore-Based Tactical Aircraft			
MiG-27	30	F-5E/F	25
MiG-29	47	F-16N	22
Su-17	35	A-6E/F	66
Su-24	107		-
Su-25	55		-
Total:	274		113

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Composition of Russian and U.S. Naval Aviation (as of end of 1993) (Continued)

Russia		United States	
Reconnaissance and ECM Aircraft			
An-12	7	EA-6A/B	125
Il-20	3	ES-2A	3
Tu-16	24	EP-3	19
Su-24MR	20		
Tu-22	6		
Tu-95RT	24		
Total:	84		147
Carrier-Based Radar Early-Warning Aircraft			
		E-2C	113
Total:	0		113
ASW Aircraft			
Be-12	55	S-3	157
Il-38	36	P-3	361
Tu-142	58		
Total:	149		518
ASW Helicopters			
Ka-25	88	SH-60	169
Ka-27	88	SH-3	138
Mi-14	63	SH-2	111
Total:	239		418

Note: Materials published in the open press were used in compiling the tables.

Changes in the composition of Russian naval aviation affect primarily antisubmarine warfare [ASW] aircraft and helicopters. A new ASW seaplane is scheduled to enter service in the second half of the 1990's. There are also plans to create new-generation shipborne helicopters, in particular, a helicopter ASW system with advanced types of ASW torpedoes, missiles, and guided depth bombs, and also armed with air-to-surface and air-to-ship missiles. The helicopters are to be tasked with providing automatic target designation for missile systems of ships and shore units. It is planned to be working for creating an advanced multipurpose shore-based aircraft designed for disclosing the surface and underwater situation, target designation, and also for combating submarines and surface ships. Due to the economic situation in the country, it is not likely that we can expect any changes in the composition of carrier-based aviation in the next few years. A reduction in the strength of shore-based missile-carrying aviation is also quite predictable as a result of removal of obsolete Tu-16 and Tu-22 aircraft from service.

MATS Flight Hours Down 80 Percent Compared With 1994

95UM04004 Moscow SEGODNYA in Russian 6 Apr 95 p 6

[Article by Leonid Kostrov: "Air Force Central Command Post: Commerce and Customs Rule the Sky"]

[FBIS Translated Text] According to data of the Central Command Post [CCP] of Russia's Air Force, in three months of this year the number of flights in the country's Air Force was reduced by more than 80 percent compared with the same period of 1994. Here at the CCP, formed back in May 1941, they recall with understandable nostalgia the recent times when military aviation of the former USSR spent more than 2 million hours in the air a year. Today, this figure seems unrealistic, although Russia's military pilots get far more flight hours than their colleagues from the CIS and Baltic countries.

From here, from one of the buildings in the capital, on-duty operations officers maintain communications with all military airfields of the former Soviet Union. Here they plot the routes over which hundreds of aircraft fly over Russia daily, the crews of which are practically not mentioned in the press, limited to the meager phrase: "military aircraft..." But it was the CCP that ensured delivery of equipment and humanitarian assistance to Armenia, which suffered an earthquake, setting up an efficient conveyor for shipment of freight and injured. At that time, they had to support daily flights of 160-200 heavy aircraft. Up to 150 aircraft a day were monitored during the deployment of troops in Chechnya.

(Incidentally, during the first hours following the earthquake in Armenia, a quite impressive meeting was

assembled at the former USSR Ministry of Civil Aviation, which was chaired by the minister of civil aviation. They discussed how to activate as quickly as possible 18 Ministry of Civil Aviation transport aircraft for delivery of cargo to Armenia. Two officers from the Air Force CCP arrived at the meeting—a colonel and lieutenant colonel. Somewhat surprised by this level of representation, the minister showed an interest in what the viewpoint of military aviation was. And he was extremely amazed when he heard that the Air Force was activating 360 "transport workers" for shipments to Armenia, and it was mandatory that 18 aircraft of the former Civil Air Fleet [GVF] be put in their schedule.)

The number of flights has been greatly reduced, but the work at the CCP has not diminished. Military pilots have to engage in constant negotiations with border guards, customs officials, representatives of commercial airlines of the GVF, and similar services of the CIS countries. For example, in order to dispatch an aircraft to Kaliningrad Oblast, it is necessary to coordinate this trip for a week with the appropriate services of Lithuania. If something happens near Kaliningrad during this week, not a single military aircraft will be able to get there without getting into a conflict with authorities of the sovereign republic.

In the opinion of officers of the CCP, where a "25-hour duty day" has been established, for the time being many problems can be resolved by agreement with colleagues from today's sovereign republics. Along both sides of the border, they speak in not altogether flattering terms about the policy and understand perfectly well that the once unified organism of the USSR Air Force cannot be broken down all at once. A number of flights "keep their word," but one of the CCP officers reasonably asked: "What will happen when our sons, who have not seen each other, sit at our consoles?"

What can be said about the future generation of sovereign countries if in Russia military aviators transporting cargo prepaid by the government of the Russian Federation are forced to prove that they have no money and they cannot contribute a single kopeck to the cashbox of another civilian airport. That is how it was with one of the heavy Il-aircraft that was hauling hauled 40 tonnes of humanitarian assistance to the Kuril Islands which suffered an earthquake. It sat for 24 hours in Novosibirsk—they tried to demand cash payment from the dead-tired officers for the takeoff and landing and for parking. A takeoff and landing of an Il-76 at a civilian airport costs 12 million rubles.

It is noteworthy that only Air Force crews have to pay money to civilian airports. Aircraft of the Ministry of Internal Affairs, Ministry of Emergency Situations, Federal Counterintelligence Service, and Border Guards land free of charge—this was decided by the government of Russia. Here they take money from the Army, even if Air Force aircraft are involved in rescue work under the auspices of the Federal Aerospace Search and Rescue

Administration [FAKPS]. At the same time, if a civilian aircraft suddenly were to make a landing at a military airfield, it is not charged.

International commissions monitoring observance of a number of treaties, for example, the CFE Treaty, have been operating in Russia for years. They must be transported, and the routes are determined by the observers themselves regardless of whether or not there is a military airfield in the vicinity of some or other installation. If you land at a civilian airport, you pay. The numerous new airlines do not care at all about Russia's international obligations.

Military aviators spend quite a bit of time on border control and customs—due to them, an aircraft can sit at an airfield an extra 24 hours. Where to go—the aircraft formally go abroad, although the cargo and passengers essentially are transported from one Russian military unit to another. You see, our troops are located in Georgia, Abkhazia, Tajikistan, the former Yugoslavia.

Now the CCP has been instructed to monitor flights of so-called "small aviation," down to motorized hang-gliders. The officers also "lead" groups of aircraft flying from airfields to aircraft plants and back. From time to time, information also appears on the numerous television screens in the CCP about "Letter A"—aircraft with top state officials. A big-screen Sony television stands in the corner—information is fed to it from computers. There is no money to purchase more serious equipment—for example, modern information indicator panels, large liquid-crystal or luminescent plotting boards.

The regularity of flights by military-transport aviation has declined in recent years. This particularly applies to aircraft going to the East. They can get stuck in Primorye, Khabarovskiy Kray, and Chukotka for a week or sometimes two: there is not enough fuel at intermediate airfields. The weather also makes adjustments to the aviators' plans. The officers sometimes have to go out and clear the runways and taxiways—the shortage of draftees is having an effect.

Despite all this, the aircraft fly, not without the CCP's help.

AEROSPACE DEFENSE FORCES

Reporter Comments on Missile-Space Defense Operations at Pechora

95UM0398A Moscow ROSSIYSKIYE VESTI
in Russian 12 Apr 95 p 2

[Article by Sergey Ovsienko, "Threads Run From Pechora to the President's 'Black Suitcase'"; "Our Special Correspondent Visits a Secret Installation of the Missile-Space Defense Troops"]

[FBIS Translated Text] Until recently these troops were strictly classified. For many, including in the Army itself, they simply did not exist. We knew that the national air defense consisted of surface-to-air missile troops, radio-technical troops, and fighter aviation. And that was it.

Now the curtain of secrecy over the Missile-Space Defense [RKO] has lifted a little. In turn, you have to think that the Missile Defense Troops are the holy of holies of the defensive shield of Russia.

Remember the recent launch of a Norwegian Missile in the direction of Spitzbergen, which raised quite an uproar here? The launch of that missile was located in mere seconds by the Missile Attack Warning Station [SPRN] located not far from the city of Pechora. The duty shift included Lt-Col V. Muzhevskiy and Majors Yu. Matus, and S. Zayegintsev. They sent all information regarding the launch, the flight trajectory, and expected point of impact of the missile to the troop command post.

The officers were later very surprised by the fuss raised around their generally routine work.

The complex, called by its designer "Daryal," is impressive: for around 15 km the two buildings are visible towering over the forest, the first 108 meters high, the second 70. In short the station is a great plant packed with diverse apparatus and equipment, with hundreds of km of power cables and tens of km of pipelines, over which more than five thousand cubic meters of cooling water circulate. The Pechora State Area Power Station [GRES] is built right under the station, for its power consumption is 25 megawatts.

And ten years after commissioning, the capabilities of the SPRN are striking. More than 1200 radiating elements literally probe an enormous space, including out space, to a distance of 6,000 km. Our previous system, the "Dnepr," which remained on alert duty for nearly 30 years, "probed" a space of only 3,000 km. In a day the crews on alert duty determine and track with high precision more than 30,000 objects, the smallest of which are ten centimeters. The station determines the fact of missile launch, the region of expected delivery of a strike, and its scope. All of this information is sent to the troop command post. Last year in its northern strategic direction the Pechora SPRN fixed 20 launches conducted in the U.S. and Norway.

Recounts the Commander-in-Chief of Missile-Space Defense, Col-Gen Viktor Smirnov, "our station can detect the warheads of ballistic missiles escorted by decoy targets. It can also track a target under jamming."

Stations like Pechora are part of a unified system which, besides the SPRNs, combines the Space Surveillance Systems (SKKP) and the ABM system. The operating principle of such a three-stage system is simple. The SKKP, for example, sends the Pechora station information that an object will appear in its zone at such and such a time, and it should be ready. The station detects the object and compares it with its space catalogue. If the object is in the catalogue and does not pose a danger, then every thing is calm. But if the object is a ballistic missile flying in the direction of Russia, then the ABM system gets involved.

No, it is not the Command of Missile-Space Defense, and not the Commander-in-Chief of the Air Defense Troops who makes the decision to use the ABM system. Who then? The Commander-in-Chief of the RKO would not answer this question, citing state secrecy. But here he drew an analogy with the Americans.

In the U.S. there is a similar system for warning of a missile attack, all information about which (if it occurs) goes to a command post. Here it is carefully analyzed and checked, and then goes to the White House of the U.S. President, who always has the "black briefcase" on hand.

In order to make the corresponding decision, the President consults a circle of persons bearing responsibility for national security. The head of government also puts his decision in the "black briefcase."

Apart from some details, the American system of reaction to a missile attack is quite similar to the Russia. That is my own conclusion, rather than that of General Smirnov. I think he will not reveal our state secrets.

The Pechora SPRN, I repeat, even ten years after the start of operation, remains the most up-to-date, and has no analogues in the world. For its design, the authors' collective was awarded the State Prize of the USSR.

But time makes its own correctives. After the breakup of the USSR, five of the eight over-the-horizon radars of the system wound up in the near abroad. The construction of two stations like Pechora was started, but has been frozen for three years now—there are no funds. And the Pechora station itself is barely holding on, thanks to the selflessness of its officers. Under the press of circumstances, nearly all of the equipment is repaired at the station; it would cost a pretty penny to send it to plants of the military industrial complex (VPK). According to General Smirnov, 7-10 percent of the necessary funds are going to the troops for operation of such stations. Just last year the station owed the Pechora GRES 40 billion rubles for electricity. Thank God, the power people had the sense not to disconnect the station from the net, as happened to a command post of the Strategic Missile Troops.

One hundred service families are waiting for receipt and improvement of housing. They apparently have a long wait. Instead of allocating the station 10 percent of the commissioned housing, the city is appropriating station housing as compensation for that which was demolished.

Pay delays are frequent, and the difference [in pay] between officers and local residents is also significant. A service member who has served 10 years in the North earns a million rubles, while the average wage in the Komi Republic is 2.5 million rubles.

Still, the Pechora SPRN is operating, for all that. Not once have its crews put out wrong information about a missile attack, something that could lead to unpredictable consequences.

New Development Projects in Space Forces*95UM0409A Moscow SEGODNYA in Russian
13 Apr 95 p 9*

[Article by Viktor Gritsenko: "Just About Everyone Wants To Launch Rockets Into Space: But Only the Aerospace Forces Have the Right To Do So"]

[FBIS Translated Text] General Vladimir Ivanov, commander of RF Aerospace Forces, recently expressed the general opinion of the military when he asserted that in the next few years, Russia could do without Baykonur, which is now outside the country. On the threshold of the 21st century, the world cosmic infrastructure will not undergo any significant changes, meaning that it would be possible to begin the work of erecting the Russian Svobodnyy Cosmodrome for heavy Angara-24 and light Rokot launch vehicles of the future. According to the estimates, construction will cost 2.5 trillion rubles (in 1994 prices) up to the year 2010. This cosmodrome will guarantee Russia's access to space, including to geostationary orbits.

Today's huge space industry grew out of its infancy only after the Second World War. It was then that the Americans transferred a large part of Werner von Braun's rocket technology from Germany to the United States. Almost all leading rocket scientists were also transferred there. The USSR had to make do with only 150 German specialists, with Helmut Grottrup, a specialist in electronics, the most prominent among them. They all labored for the Union on the island of Gorkodmya on Lake Seliger, where a German design office was created. After having worked in the USSR until November 1953, they were sent by train to the GDR.

During the war, Germany was able to create a huge rocket potential, the full scale of which became known to the Allies only after its destruction. And although 1,500 of the 5,800 FAU-2 rockets produced were unusable owing to insufficient technical reliability of the rocket, which was also associated with subversive activity by the Resistance Movement at the Reich's plants, utilization of German technical experience saved our scientists and designers (and not only ours) many years of work, exerting a certain influence on development. At the same time, it should be noted that it was only owing to presence of talented scientists in our country who were able to rework the German developments and create their own originals, distinguished by the absence of German "birthmarks".[sic]

The first German A-4 rockets were launched in May 1946 in the United States from the missile test range in White Sands, New Mexico. Later on, launchings were

conducted from the Long-Range test range (presently the Eastern Test Range on Cape Canaveral, Florida). Kapustin Yar became a launch site in the USSR in fall 1947. It was here in Astrakhan Oblast that the first Russian missile test range was created, from which the series of Kosmos launch vehicles was launched between 1961 and 1988.

Baykonur took center stage in 1957, having become the largest cosmodrome in the world.

Following the American lead, the English built a rocket test range in 1946, though in contrast to the United States and the USSR, they did so not on their own national territory but in Australia. English rockets were tested here, and it was from here that England "stepped into space" in 1971 by launching its first Earth satellite, Prospero. However, in July 1976 this cosmodrome was shut down by the Australian government as being unprofitable, and its equipment was mothballed.

The French also built their cosmodrome on "alien" territory—in Algeria, but this facility in Khammagir [transliteration] existed for less than 3 years: An official closing ceremony was held there in accordance with the Evian Agreement between France and Algeria on 21 May 1967. The equipment was dismantled and moved to French Guiana (South America), where the Kuru [transliteration] Cosmodrome, the closest to the equator, has been operating since 1968.

In 1964 the Italians set up an unusual cosmodrome consisting of two floating platforms 5 km from the coast of Kenya, in Formosa Bay. Christened "San Marino," it served as a launch site for small space rockets until 1988, and it is no longer in use.

The world cosmic infrastructure presently numbers 13 permanent cosmodromes, of which nine are in active operation. These are the Russian Plesetsk and Baykonur, the American Canaveral and Vandenberg, the French Kuru, the Chinese Xichang and Jiujuan, the Indian Shriharikota and the Japanese Tanegashima cosmodromes. In 1994, 91 rockets were launched from them (including 49 Russian ones), inserting 114 spacecraft into orbit. Besides this, the Chinese Wuzhai, the Japanese Kagoshima and the Israeli cosmodrome in the Negev Desert, from which the Ofek-3 reconnaissance satellite was successfully launched on 6 April of this year, are utilized sporadically. In May the United States plans to launch the light Conestoga 8PH from the cosmodrome in Wallops.

A minimum of two Russian plans for cosmodromes in Australia and in Papua—New Guinea for Proton launch vehicles are being discussed.

The cost of each is estimated at on the order of \$1 billion.

Space Launches in the World in 1994

Country	Cosmodrome	Launch Vehicles	Spacecraft
Russia	Baykonur	30	36
	Plesetsk	19	29
	Total	49	65
USA	Vandenberg	4	5
	Canaveral	21	22
	Wallops	-	-
	NB-52 and L1011	3	3
	Total	28	30
France	Kuru	8	11
China	Xichang	4	5
	Jiujuan (Shuangchangzi)	1	1
	Taiwan (Wuzhai)	-	-
	Total	5	6
India	Shriharikota	2	2
Japan	Utinoura (Kagoshima)	-	-
	Tanegashima	2	3
	Total	2	3
Israel	Negev	-	-
	Total:	94	117

It is felt that the Ukrainian project for its Zenit rockets on Australia's Cape York may offer them competition. Only the Moscow Design Office of Transport Machine Building can plan the launch complex for the Zenit rockets.

Ukraine is also advertising plans to create a floating cosmodrome out of the unfinished cruiser "Varyag", inherited from the USSR.

In turn, Russia offers the Priboy project. It is based on a converted sea-based ballistic missile created out of the RSM-52 and RSM-54 military missiles, and it can be delivered to and launched from any region of the World Ocean by naval ships of the "Ivan Rogov" or "Stakhanovets Kotov" type. In this case a launch vehicle launched from the equator could insert a 2,400 kg payload into a 200 km orbit.

Aerospace systems by which to launch both light launch vehicles (the Burlak project using a refitted TU-160 bomber) and heavier launch vehicles (the Aerokosmos project) comprise the largest group of projects.

According to the developers of Burlak, a need for this system "may arise in the course of combat activities if the enemy is able to destroy or significantly weaken an orbiting grouping, and if the Baykonur and Plesetsk cosmodromes are disabled."

Over a period of a number of years the United States has been using two refitted airplanes—the B-52 bomber and the L1011 passenger aircraft—to launch spacecraft carried by light Pegasus rockets.

Ukraine has also decided to stay up with the pack: It is now working on a 460-tonne modification of the Zenit, which will be launched from the 16-engine An-225 Mriya. Of course, it is not yet entirely clear how this will happen in practical terms: After all, the maximum load this airplane can carry is 250 tonnes.

And finally, the same Mriya is to be used in the Russian-Ukrainian MAKS project as the launch pad for an orbiting shuttle craft—a scaled-down copy of the well known Buran, which will fly into space with 8 tonnes of cargo. This project is being developed at a cost of \$3.5 billion by the Molniya Scientific-Production Association (Gleb Lozino-Lozinskiy, general designer).

Of all of the conversion projects, only that of the Kompleks Scientific and Technical Center has reached the stage of practical implementation. It is designing the Start launch vehicle based on Topol ICBMs. Two launchings have been carried out, one of which ended with an accident on 28 March.

It is evident from this brief survey that there are more than enough parties desiring to launch their own rockets into space. Realization of even some of the projects may create a situation close to anarchy. It became known from well informed sources that in early March the Russian Ministry of Defense decided that all of the work of creating, testing and launching launch vehicles, including those created under conversion programs, will be carried out only by the Russian Aerospace Forces.

NAVAL FORCES

ADM Aleksin on Naval Reform

95UM0410A Moscow: MORSKOY SBORNIK
in Russian No 3, Mar 95 pp 9-18

[Article by Rear Admiral V. Aleksin, candidate of military sciences and professor, and Captain First Rank of the Reserves E. Shevelev, doctor of military sciences and professor, under "Time and Navy" rubric: "On the Reforming of Our Navy"]

[FBIS Translated Text] The fundamental changes in the world have brought us to a new so-called postconfrontational era. Despite the end of the "cold war," however, we see neither security for the world as a whole nor security for individual states. On the contrary, there has been an increase in the threat of regional and local armed conflicts on different scales, which in the future may become the most likely way of resolving ethnic, religious, economic, territorial, and other disputes between states. The current events in different regions of the world serve to confirm this. At the same time, a considerable share of the existing or potential "hot spots," as they now say, are

located near the borders of Russia and what is more one of them has appeared within its territory.

The systemic crisis that has erupted in our country has had a serious effect on the state of its Armed Forces and, naturally, on such an integral and extremely important component of the Armed Forces as is the Navy for any naval power. This, as well as the absence until now of a national concept for the specific directions of the development of the Navy, as evidenced by the existing "Basic Positions of the Military Doctrine of the Russian Federation" (we note that there is also no such concept for the other branches of the Armed Forces), has evoked far-reaching disputes at various levels: from statements in the mass media to hearings in the State Duma of Russia. At the same time, the spectrum of proposals and demands covers the whole range from the urgent sale of all ships now in existence for scrap metal so that the proceeds may be used for the building of a small but up-to-date navy to the preservation of the existing fleet forces even down to the "last motor launch." There are those who say that we practically have no need for a navy, because no one threatens us and will not threaten us in the future. There are also those diametrically opposed to this opinion.... But everyone agrees on one thing: under the new conditions, our Navy needs reform.

And it must be recognized that it has been under way for years now, with the only stipulation being that as measures supposedly corresponding to this task they name those that are forced by the change in the naval basing system and the reduction of its numerical strength in accordance with international treaties, the enormous deficit in financing, and other analogous reasons. Meanwhile, to speak of the present reform, it must be based strictly on a scientifically founded methodology. The diversity of tasks arising in the course of the reforms being carried out and still planned shows that they cannot be resolved merely through changes in individual components of military organizational development or aspects of the work of military cadres. The isolated examination of the problem situation in one particular area and the ignoring of its multiplicity and interdependence inevitably leads to serious problems in others. The realization of decisions made without taking this into account inevitably leads to new economic expenditures and material losses for the state and for the Armed Forces—a lowering of their combat effectiveness and readiness, that is, their guaranteed accomplishment of defense tasks. At the same time, one should not close his eyes to the fact that the armies and navies of the leading countries of the world are continuing to develop and improve.

Therefore, in our view, the initial stage in military reform must be the development of a model of the existing problem situation and the identification of its inherent dialectical contradictions. To determine the ways to resolve them, it is expedient to view such a situation under the conditions of the functioning of three closely related and interacting systems:

- the problem-containing system, in which the situation at hand is perceived as being a problem (in our case, the state of the Armed Forces);
- the problem-solving system, which can influence the course of events and processes so that the problem can be solved (this is our state in the totality of the policies of its national institutes, status of the economy, and human resources, existence of educational and scientific potentials, prevailing moral and spiritual values in the society, level of public consciousness, etc.);
- system of the external environment, where both of the above-mentioned systems exist and with which they interact (this is the geopolitical and geostrategic situation in the world and also the prospects for its development).

It is obvious that elements of all of these systems have many interrelationships and that their status in some influences the development of processes in others. But the nature and ways of resolving problem situations are specific to each of the systems. In our case, for the problem-containing system, they have the pragmatic objective of the unconditional achievement of a qualitative state of the armed forces that would correspond to present and future demands on them and that would make it possible for them to resolve a whole complex of probable tasks. The problem-solving system is characterized by an inclination toward the search for rational ways to guarantee the achievement of an optimum balance of expenditures for the military needs and the economic possibilities of the state. The influence of the environment, and especially its dynamism, may thereby be so significant that it may even put in doubt the very formulation of the previously set tasks and the substantiation of the chosen ways to resolve them.

From this it is clear that the problem of the reform and development of the Armed Forces of Russia, including the navy, is not a separate and independent problem but is a complex combination of interrelated problems of the entire state. It seems, however, that there was no comprehensive and integral study in anticipation of the reform of our armed forces, at the outset of which its very methodology would have been defined. Meanwhile, the Armed Forces of Russia, just as their component branches, including the Navy, are organized hierarchically in the system plan in an enormous complex of large and complex multifunctional (organizational-administrative and social-technical) dynamic systems. This is why one must act accordingly in resolving the problems arising in them. For any change in the composition, structure, or practices in the functioning of individual systems in the large and complex multifunctional dynamic systems has an immediate effect on the quality of the overall functioning. And the realization in its structure of inadequately studied but substantial changes may result in a dramatic reduction of effectiveness or even the loss of its main functions. Meanwhile, our own rather recent experience suggests that their restoration is

inevitably associated with expenditures that significantly exceed the "gain" from the reduction of the part of functions from the system previously in effect, whose exclusion was found to be expedient at some stage without proper analysis.

Therefore, in our view, this matter also requires preliminary comprehensive and integral studies whose results must be reflected in a "STRATEGY FOR THE NATIONAL SECURITY OF THE RUSSIAN FEDERATION" as a special and properly affirmed state document. In our view, it must include a substantiation of Russia's ongoing national-state interests at the present time and also in the near and longer term and, flowing out of them, the main directions of domestic and foreign policy, economic development, education, science, and military policy of the state. It appears that in developing this document one will formulate the country's current military doctrine as the operative program for the development, preparation, and utilization of its Armed Forces. And finally, it is necessary to pass a "Law on Military Reform in the Russian Federation" that includes its main directions that must be carried out by all state structures integrated into the national security system and also the main stages in this work, time of their completion, sources of financing, etc., that is, a working mechanism for the implementation of military reform in the state, including in its Armed Forces.

It must be emphasized that Russia has never had such a fundamental state document as the Strategy for National Security. Meanwhile, in the United States of America, it has existed for more than a century and under the law the President of the United States must present it to Congress every year. In particular, the report that W. Clinton presented to Congress in July 1993 states:

"The primary objectives of the new National Security Strategy of the United States for the new historic conditions based on new threats and favorable possibilities now opening up are:

- dependably support security by relying on combat-ready armed forces;
- contribute to the stimulation of the American economy;
- help strengthen democracy abroad."

And further: "The Armed Forces of the United States play a key role in the achievement of success in the implementation of our strategy. Our country has no equal in terms of its military possibilities: the United States is the only state capable of carrying out large-scale successful operations far from its own borders...." At the same time, one of the main objectives of the U.S. strategy remains: "Provision of assistance in the affirmation of the leading role of NATO in Europe in the period after the end of the 'cold war.'" Virtually predetermined is the acceptance into NATO of our former allies in the

Warsaw Pact and even a number of countries that declared their independence after the disintegration of the USSR.

At the same time, it is planned steadily to increase the role and importance of the fleets of the United States and its allies in the realization of their foreign-policy concepts. But one cannot overlook the fact that in the second half of the 1980's the political and military leadership of the United States began a persistent effort to convince us that the USSR and especially Russia is a regional and continental power and that it now has no enemies and therefore has no need for a strong navy. A number of economic, political, and other arguments are presented to justify this. And although their one-sidedness and artificiality are apparent in even a superficial examination, as strange as it may seem such ideas find support among part of our society, a considerable number of politicians, and even some academics. But the main thing is that they are widely disseminated by the mass media, as a result of which the opinion is systematically planted that Russia's oceanic fleet is not needed and that the main mission of its small Navy should remain the direct guarding and defense of the "significantly reduced" shore. It seems, however, that this a profoundly erroneous and extremely harmful position.

It is quite obvious that the Navy as a branch of the Armed Forces is a capital-intensive structure and very costly just with respect to the guaranteeing of its daily functioning and therefore under the conditions of the present economic crisis it is an extremely heavy burden for our society and state. But one must not ignore the fact that Russia remains a great maritime power. This is dictated, in the first place, by its geostrategic situation, about which people are always talking. Secondly, despite the unique resources in the territory of our country, its economy also has a strong maritime component with growing prospects for the development of no less rich economic resources in its economic maritime zone and on the continental shelf and also makes extensive use of maritime and oceanic communications. Thirdly, it is still necessary to resist quite probable attempts at the forceful resolution of existing and recurring conflicts with other countries, to protect our national interests in the world ocean, and to guarantee the defense of maritime borders.

All of this was well understood and foreseen by a real reformer of Russia, Peter the Great, who almost 300 years ago founded and built the navy of the Fatherland and upon his death also called for its development and strengthening. And indeed, the contribution of the Navy to the establishment of our state as a great maritime power is indisputable. The realization of the increase in its role under the present conditions has meant that in recent decades our Navy became the "second navy in the world" in terms of its power, which also did much to guarantee a certain international stability. But the destructive processes that have taken hold of the country in recent years have given rise to conditions under which its numerical strength has been cut almost in half.

Of course past miscalculations along with the natural aging of the ships contributed to such a rapid reduction of the fleet strength of our Navy but particularly influential were the inadequate budget financing (about 60 percent of the need, whereby only half of the allocated funds actually reaches the Navy) and also the destruction of the material base of the shipbuilding industry and disruption of cooperative production ties without which it simply cannot exist. It is sufficient to say that essentially not a single new ship of the first and second rank has been laid down in the last two years and only a small share of those laid down in past years are being completed.

But the Russian Navy, courageously bearing the present difficulties along with the rest of the country, is nevertheless alive and active. This is shown by the fulfilled plans for combat and alert duty and combat training in the fleets as well as by the results of competition for preeminence in the Navy. It lives primarily because of the patience and loyalty of seamen and especially of naval officers to their military duty. But this patience is not endless. It is now recognized at all levels, including in the mass media, that today the officer corps of the Army and Navy is not to be envied. But they are not losing hope that Russian state authority will finally remember its constitutional responsibility for the state of the Armed Forces and will begin to appreciate and fully support their intensive, crucial, and often dangerous labor. For it must be remembered that whereas shipbuilding is costly and requires much time, if necessary an entire fleet force can be built in three to five years. The training of a professional officer at the level of commander of a combat unit of a ship takes an average of 10 years after the conclusion of his general schooling, that of a ship commander takes 15 years, and that of a commander of a fleet force takes 20 to 25 years. Clearly, the ease with which legislators and the government resolve urgent fleet problems today and, the main thing, their most delicate part—the status and support of personnel, is explained by their poor knowledge of the history of our Motherland, including the most recent history.

A considerable number of events of recent years, about which our "independent and free" mass media have mentioned only in passing, even though, in our view, the attention of the society should have been directed to them with particular stress, indicates that Russia's weight in the resolution of international questions has declined and government circles of some countries have begun to make statements bordering on interference in our affairs. This confirms the well-known axiom that the weak in world politics and economics are simply not taken into account. Russia's loss of its maritime power will even further exacerbate this situation. Thus, inevitably we again come to the question that has repeatedly been raised for Russia: What kind of navy does it need?

To answer this question, in our view, it is expedient to proceed on the basis of the fact that since it is considered that at the present time and in the near future the greatest threat to peace and stability comes from local

and regional armed conflicts and wars (conflicts of low and medium intensity, according to the classification of the United States), then in the development of the Russian Navy it is necessary to proceed above all from the probable volume of tasks that it will have to resolve precisely in such conflicts. But in assessing the probable development of events, one must not rule out the possibility of a large-scale war, as the United States does not rule it out, calling it a high-intensity conflict. At the same time, an extremely important component of the military doctrines now in effect for almost all countries, including Russia, is the prevention of military conflicts primarily through deterrence of potential aggressors by means of the threat of a devastating retaliatory strike, although they also give due attention to the use of political-diplomatic, international legal, economic, and other means for this purpose.

But a contemporary adversary who has decided on an invasion or other aggressive actions may be opposed only through sufficiently powerful and mobile forces capable of guaranteeing their superiority in a given region in a short time and prepared to inflict unacceptable losses on the enemy. The rapidity of the development of such conflict situations requires task groups on the basis of the regular armed forces of the state that include, as a rule, units from all of the main branches of the armed forces: the ground forces, air force, and navy. And it is precisely the navy that has the greatest mobility in combination with the capability of autonomously carrying out intensive combat operations over a long time.

Furthermore, in accordance with today's views, in the event that an aggressor begins hostilities, in the course of an air-land-sea operation the deterrent forces must defeat the enemy in the entire depth of his disposition of forces with the objective of establishing the conditions for the cessation of military operations. The main emphasis in such an operation is put on effective engagement, effective electronic countermeasures, and close interaction of the forces of all branches of the armed forces. In accordance with the experience of the largest such operation of our time—"Desert Storm"—particular significance is attributed to the effectiveness of the air offensive operation and initial massed strikes by aircraft and precision weapons, including sea and air-launched cruise missiles. In the course of the indicated operation, until the main groupings of ground forces were put into action, for more than a month the multinational forces made massed aviation, missile, and radioelectronic strikes for the purpose of the disruption of the national and military command and control of Iraq, suppression of its air defense systems, annihilation of its aviation and missile complexes, and destruction of supply and communications bases.

Having demonstrated the overwhelming superiority of the forces of the coalition and also the possibilities of the newest systems, arms, and military equipment in the scope of a unified combat supersystem integrating contemporary models of weapons and high-tech means of

command and control, communications, interpretation of the situation, operational and tactical reconnaissance and target designation, exchange of information, etc., the political and military leadership of the United States drew the following main conclusions:

1. The combat effectiveness of contemporary precision weapons is equal to that of tactical nuclear weapons.
2. The boundaries between defensive and offensive operations are becoming more and more blurred in our time.
3. There must be no saving of means for the identification of one's own forces.
4. In defending the interests of one's state in the world, it is essential to strive to resolve conflicts through political means and only then, when there are no results, under the UN flag and with the political, financial, and military support of allies, seek to resolve the problem by carrying out a rapid and powerful military operation while preempting the military response of the enemy.

About 90 ships of the main types from the U.S. Navy participated in this operation. They included six aircraft carriers, two battleships, eight nuclear-powered attack submarines, and 15 other ships armed with "Tomahawk" sea-launched cruise missiles. The total number of these missiles that they fired reached almost 300.

In noting a number of unresolved questions in the course of the operation, above all in the organization of the interaction of the navy, air force, and ground forces, that need to be overcome in a short time, the military leadership of the United States highly valued the effectiveness of its own naval weapons and therefore for participation in such combat operations in the present and future it decided to arm all nuclear-powered attack submarines and 80 percent of surface ships, primarily the types guided-missile cruiser and guided-missile destroyer, with "Tomahawk" sea-launched cruise missiles. (Altogether more than 2,600 cruise missiles, including more than 2,000 with a range of up to 2,500 km, were intended for the destruction of point ground targets in the depth of the enemy's territory). These and a number of other measures make it possible for naval groupings to handle strategic missions not only in oceanic and maritime theaters of operations but also in continental theaters.

The political situation is changing very rapidly, bringing fundamental changes in the international situation. Have we not seen many such examples in the century that is now drawing to a close? Therefore, is it legitimate "not to notice" measures being carried out in the military area in other countries of the world? Meanwhile, U.S. naval strategy essentially remained unchanged after 1990. In all cases of a planned reduction, even taking into account the fulfillment of the START-I and START-2 treaties, by 2003 their Navy will have about 350 warships of the main types, including 18 SSBN's of

the "Ohio" class, which are the foundation of the U.S. strategic nuclear forces (each with 24 "Trident-2" missiles and having a range of up to 11,000 km, that is, altogether about 1,750 nuclear warheads), up to 70 nuclear-powered attack submarines built after 1980 (each with 12-16 "Tomahawk" sea-launched cruise missiles with a range of up to 2,500 km or sea-launched cruise missiles of the new generation with a range of up to 4,500 km).

In addition, the general-purpose forces will include 12 attack aircraft carriers (with five aircraft carriers in reserve), nine of which will be nuclear, and it is planned to continue their construction in the 21st century. Each of them is capable of carrying 90-100 aircraft and helicopters, half of which carry tactical nuclear weapons. These forces will also include about 180 large surface ships: 37 guided-missile cruisers (including seven nuclear) each capable of carrying up to 122 "Tomahawk" sea-launched cruise missiles, 65-70 guided-missile destroyers (up to 90 sea-launched cruise missiles on ships of the "Arleigh Burke" class and up to 60 sea-launched cruise missiles on the "Spruance" and also 35 guided-missile frigates of the "O. Perry" class and up to 50-70 large universal landing ships of the amphibious forces each capable of carrying as many as 30-40 units of carrier aviation. Their Navy will also retain ships capable of transporting across the ocean and landing an expeditionary division or brigade of marines under any conditions of the situation (up to 30,000 men with heavy armament). Thus, 95 percent of the warships that comprise the combat nucleus of the U.S. Navy are ships of the ocean zone capable of carrying on active offensive operations over a long time in any region of the world ocean and at practically any distance from their bases.

An analysis of the state and development prospects over the next 25-30 years for the navies of other countries, especially members of NATO, also shows that all of them are continuing a significant strengthening and improvement of the naval components of their Armed Forces. It is sufficient to say that England, Argentina, Brazil, India, Spain, France, and others having open and extensive maritime borders and also economic maritime zones rich in natural resources possess aircraft-carrying ships.

At the same time, to refute incompetent statements about the supposed aggressive development of the Soviet Navy, it is sufficient to look at its composition—in 1990, for example. It immediately becomes clear that it was intended primarily for the execution of defensive operations in maritime and oceanic zones: 64 percent of its ships were surface ships of the coastal zone (33 percent of the total number of ships and 31 percent were combatant craft). Surface ships capable of carrying out actions in the oceanic zone at a large distance from their bases accounted for only 14 percent. And their actions in the oceanic zone were not very effective without the presence of strong forward bases like Subic Bay, Guam, Diego Garcia, Yokosuka, Holy Loch, Rota, and others that the U.S. Navy had. And now, although the fleet

forces of our Navy have been reduced almost by half, it still has 32 percent surface ships of the coastal zone, 27 percent combatant craft, and just 17 percent surface ships of the oceanic zone. And it is necessary to note one characteristic detail in the assessment of the composition of our Navy in the West. The latest issue (1994-95) of "Jane's Fighting Ships" shows the composition of the navies of the world separately in terms of combat-ready forces and forces in reserve or under construction and just for the Navy of the Russian Federation the strength shown for the beginning of 1994 exceeds the real data for its combat-ready forces by 30-40 percent. It is probably not difficult to find the answer to the question of why this is done.

At the same time, it is no secret to anyone that if the situation in which our Navy now finds itself does not change, then by 2000 its force composition will be: only 15-20 ballistic-missile submarines whose time in operation is close to the limit; 30-40 nuclear attack submarines and 20-25 diesel submarines, of which no more than 50 percent can be combat ready. The picture will be analogous with respect to surface ships: no more than one aircraft-carrying cruiser, two or three missile cruisers, 7-10 guided-missile destroyers and an equal number of guided-missile frigates, and 30-40 missile patrol boats dispersed in different maritime theaters of the huge country.

Thus, taking into account the loss of support elements of the infrastructure, especially in the Baltic and Black Sea, by 2000 the ratio of the total combat potentials of our Navy and the U.S. Navy will be around 1:20 or 1:25 compared with the 1:2.5 or 1:3 that prevailed at the beginning of the decade. Regionally our naval power will be one-third to one-half that of Sweden in the Baltic and half that of Turkey in the Black Sea. Our total combat potential will be comparable to that of the navies of such countries as Great Britain or France. And taking into account the fact that the length of our maritime borders is 15-20 times as great, we will be that much inferior to them in our ability to defend our borders and our national interests on the seas. Bearing in mind that geopolitically, geostrategically, and militarily-politically Russia over the foreseeable historical perspective is one on one against possible blocs and military-political alliances, the superiority of almost any of the coalition adversaries will certainly be assured. Meanwhile, even now the long-term interests of many nearby countries do not coincide with our own. It is expected that with time the differences will intensify, maintaining the military threat in practically all theaters adjoining the territory of our country.

We repeat that such a prognosis of the development of events is quite probable in the case of the maintenance of the destructive tendencies prevailing in the territory of the former USSR in the last five to seven years. Contributing to this, in our view, is the lack of legal responsibility of authority structures of the Russian Federation for the state of the country's Armed Forces, including the

Navy, the lack of resolve of the high military command, and the passiveness of the leadership of enterprises and organizations of industry and science with respect to defense questions in combination with the inaction of military and naval science that failed to substantiate and propose promising, scientifically well-founded, and rational ways to preserve and develop the defense potential of the state under the new conditions.

In speaking of the Navy, such an unfavorable development of events can certainly be avoided, for which, in our view, it is necessary:

1. To correct and, with the scientific substantiation of the strategy for the national security of Russia at the beginning of the 21st century, to define precisely the tasks of the navy in the country's defense system. The authority structures of the state as well as the public must be made aware of them and understand them so that their long-term support can be secured.
2. Based on the tasks so defined, on the basis of the methods of military systematology and taking into account our previous experience, the Navy must scientifically substantiate a concept for the next 5-25 years for the coordination of the Navy with respect to its effective strength, systems, and the means of all kinds of support effectively interacting with other branches of the Armed Forces of the state in the scope of a unified combat system and capable of guaranteeing the performance of the set tasks with the assigned effectiveness over the expected period of time.
3. Prepare and pass a state program for the regeneration of the Navy as a law, initially for 10 to 15 years. In so doing, the shipbuilding program must be only a component of it. And here the Government of the Russian Federation must bear strict responsibility for completeness, quality, and deadlines for its accomplishment. And one must not hide behind a shortage of funds and resources. In our opinion, they have not yet truly sought them for this purpose.
4. Along with the resolution of all of the above-mentioned tasks, utilizing the experience gained over the past decades and based on the application of up-to-date methods of military systematology, including modeling of possible counteracting combat systems in the NIU, Naval Academy, and General Staff of the Navy, and in the course of the operational and combat training of the fleet forces, scientifically substantiate the principles for the training and use of naval forces in peacetime and wartime.

What are the basic tasks of our Navy?

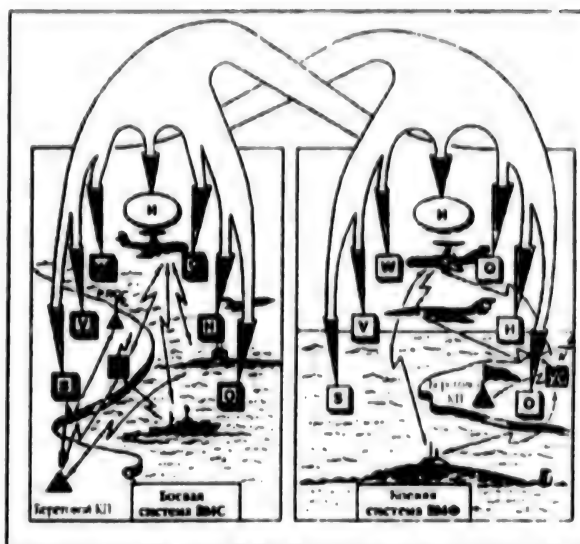
In accordance with the "Basic Positions of the Military Doctrine of the Russian Federation," the Navy as part of the Armed Forces of the country serves to protect the sovereignty, territorial integrity, and other vitally important interests of the Russian Federation. At the same

time, its priority task along with other branches of the Armed Forces of the Russian Federation, together with political, diplomatic, economic, and other actions, is to prevent the eruption of wars and the rise of armed conflicts. In the event of aggression against our country, the task is to repel the aggression, to cover the facilities of the state and its forces and troops from oceanic and maritime sectors, and also to defeat the enemy for the purpose of establishing the conditions for the cessation of hostilities at the earliest possible stage and the signing of a peace treaty under conditions corresponding to the interests of the Russian Federation. Another task of the Navy of the Russian Federation is to carry out operations in support of peace under a decision by the UN Security Council or in accordance with obligations in international alliances. We think that to this it is sufficient to add the guarding of the underwater borders and maritime resources of the Russian Federation against illegal incursion and utilization by foreign states and counteraction against terrorism, the transportation of narcotics, and actions by foreign states aimed at restricting the freedom of navigation of ships of the Navy and of civil agencies of the Russian Federation on the open seas.

Here it is also necessary to bear in mind the latest steps by the leadership of the United States and its NATO allies, who declared in Brussels and Budapest in December 1994 that it was precisely Russia that suffered defeat in the "cold war" and stressed the striving to consolidate for themselves the advantages gained from the present geostrategic and geopolitical changes in the world. This is probably the aim of the efforts to dislodge Russia from its spheres of influence and to move the forward boundaries of NATO right up to the borders of the Russian Federation. Under such conditions, the most expedient actions by Russia in the area of geopolitics and military policy are those aimed at guaranteeing its own long-term national interests, whereby they will be most effective in the new economic and military-strategic integration of Russia with the majority of the states of the CIS.

In proceeding from the general tasks of the navy in the country's unified system of defense to its composition and proportionality, we would like to note that in our understanding the proportionality of the Navy consists in the integral totality of interacting elements and systems of the Navy, Armed Forces of the Russian Federation, and the entire state in which the Navy as an operational system is always at a maximum stage of readiness for the effective accomplishment of the tasks set before it under any conditions. And as applied to the navy (naval forces), the term "operational system" is understood to be an integral formation established by each of the opposing sides on the basis of the deployment of the appropriate force groupings as well as systems and facilities of different purposes closely interacting for the coordinated execution of the set military tasks.

A subject of the theory of operational systems is that of the laws and patterns of their formation (creation),



Mechanism for the Reciprocal Effect of Opposing Operational Systems in Armed Combat at Sea

functioning (application), and development. The studies may also examine operational systems of a strategic, operational, and tactical scale as component parts of systems of a higher level. The new conceptual apparatus reflecting the basic functional qualities of the opposing operational systems (see diagram) includes:

- the intellect (I) is the capability of making a rational decision on the use of one's subsystems for the organization of purposeful functioning;
- organizational discipline (O) is the capability of fully realizing the possibilities of one's subsystems through the efficient organization of forces, their interaction and all kinds of support, combat and cruising formations, disposition of forces, and the possibility of their change in a manner that is adequate to the situation;
- observability (H) is the capability of gaining information on the state of forces and means (one's own and those of the enemy) that is necessary for the organization of purposeful functioning;
- controllability (V) is the capability of assigning missions to the forces in accordance with the decision made for their use and of communicating them to the forces while exercising control of them in real time;
- secrecy (S) is the capability of functioning secretly with respect to the enemy and of achieving the element of surprise in one's actions;
- combat capability (W) is the capability of executing distinctive combat missions that is determined by the degree of achievement of set objectives or the probability of the performance of the mission under the given conditions of the situation;

—operational stability (Q) is the capability of maintaining and realizing one's combat capabilities while performing the tasks under consideration in different conditions of the situation.

For an objective modeling of the operational systems for the tasks set for the Navy, which, as was noted, must be refined with changes in the general situation, it is necessary above all to free oneself from the prevailing subjective and populist notion that "Russia has no enemies" and to be guided by the well-known truth: "A state has no permanent allies and friends but there are only permanent interests." Then in the left part of the model as an opposing operational system it is necessary to put the navies of countries neighboring Russia in the corresponding theater of possible military operations on the basis of their proclaimed permanent national interests that do not correspond with ours, their participation in military alliances and blocs, the status and development prospects of their navies, and the plans and practices in the operational use of forces in peacetime and wartime.

The objectivity and validity of such an approach is confirmed by the unchanged orientation of the naval strategies of the United States and its NATO allies, which, in contrast to us, have not undergone any fundamental changes in the postconfrontational era, which fully corresponds to their permanent national interests. Being guided by an analogous approach, to resolve the most pressing task of the Armed Forces of the Russian Federation and Navy—to prevent the unleashing of war—we too must maintain the naval component of the nuclear deterrent forces, the naval strategic nuclear forces (This, by the way, is set forth in international agreements.). And some increase in the noise level of our homing antisubmarine rocket weapon systems in comparison with the American SSBN's and hence the lower level of secrecy of their actions is largely compensated by the multiplicity of tactical applications of their strategic weapons (which the SSBN's of the NATO naval forces do not have) and by the military-geographic characteristics of the coastal seas of Russia in the Arctic and Pacific oceans. In response to the views of some civilian specialists in the area of strategic studies disseminated in the mass media on the supposedly inadequate preparedness of the naval strategic nuclear forces in comparison with ICBM's, it can be said with respect to actions under launch on warning after detection of a nuclear attack that the experience of operational and combat training of naval forces in recent years confirm the ability of the naval strategic nuclear forces to successfully perform this task as well.

According to specialists, for the effective performance of the basic mission, it is sufficient to have in the naval nuclear strategic forces 20 homing antisubmarine rocket weapon systems of the corresponding project in both the Northern Fleet and the Pacific Fleet, which is one-third the number that we had in 1990, with an increase in the reliability of all kinds of combat support and control. Therefore, based on a long-term forecast of the development of the geopolitical situation in the world that

indicates that Russia will still need strategic nuclear forces for a very long time, it is now necessary to plan for the immediate—when the crisis in the economy has been overcome—resumption of the building of SSBNs of a new unified project on the basis of the latest technologies and armed with an advanced missile. Calculations show that the reliable performance of tasks by the naval strategic nuclear forces will be guaranteed by the permanent maintenance of the forces of homing antisubmarine rocket weapon systems in the Northern and Pacific fleets in a state of combat readiness, with no less than 15-20 units having a total of up to 240 ballistic missiles and about 1,000 warheads. Only this will guarantee the stability of the Nuclear Strategic Forces of Russia under the most varied versions of the development of conflicts of any intensity.

At the same time, to guarantee the safeguarding and reliable functioning of the naval strategic nuclear forces under any conditions of the situation, and also for the establishment and maintenance of operational conditions in naval theaters that make it more difficult for the adversary to begin and wage military operations, the Navy must have general-purpose forces that contribute significantly to a complex of measures preventing the unleashing of armed conflicts. In the event of aggression, the general-purpose forces of the Navy must repel strikes from maritime and oceanic sectors, defeat the attack forces of the enemy navy, hinder their waging of large-scale and deep naval operations, and, together with other branches of the Armed Forces, establish the necessary conditions for the effective performance of defensive operations in continental theaters of war.

To resolve these complex and diverse tasks, the general-purpose forces must include submarine forces that are the basis for the attack potential of the Navy and the most universal service component capable of effectively fighting any naval enemy. Under the conditions of the defensive doctrine, surface ships and naval missile-armed and antisubmarine aircraft remain the principal means of gaining preeminence in the seas adjoining the territory of Russia and of actively carrying out operations together with submarines and other component services to repel enemy aggression.

An analysis of the experience in the war in the Persian Gulf shows that in today's warfare the first "blinding" and subsequent strikes in the form of the massed engagement from maritime sectors of military and national authorities, air defense system, naval stations and support bases of troops (forces), their groupings, and important and critical civil facilities will be inflicted by precision sea and air-launched missiles. And their delivery systems—submarines and surface ships, including aircraft carriers, and also air attack forces—will be deployed at attack positions many hundreds or even thousands of kilometers away from the indicated facilities. In the event that such facilities are in the territory of Russia, then on the Atlantic these positions may be located on a line from the North Pole through the

Greenland, Norwegian, North, and Mediterranean seas, in the Indian Ocean, in the Red Sea and Persian Gulf, and in the Bering Sea and northwest part of the Pacific Ocean up to 1,500 km to the east and northeast of Japan and the Kurile Islands. With the appearance of sea-launched cruise missiles of the new generation with a range of up to 4,500 km, the zone of their use will cover the entire northern part of the Atlantic and Indian oceans and the northwest part of the Pacific Ocean to the island of Guam and the atoll of Midway.

It is precisely these circumstances that one must bear in mind in considering the defense of the territory of Russia and not just its shore against an enemy approaching directly from maritime sectors. Nuclear submarines are the forces capable of effectively counteracting the enemy's naval forces including delivery systems of sea-launched cruise missiles prior to their reaching the attack positions and also capable of maintaining unfavorable operating conditions for him in these regions, that is, disrupting the missile and air attack and inflicting unacceptable losses on these forces from the very start of hostilities. The world wars show convincingly that precisely they and aviation are the main attack force in the war on the seas. It is precisely for this reason that 243 of 464 nuclear-powered submarines (together with SSBN's) built in the world were Soviet submarines. Now a little more than 100 of these remain in the Russian Navy, including less than 70 multipurpose submarines, and only about 50 percent of them are up to date. Calculations show that to handle the probable missions the general-purpose forces of the Navy must have no fewer than 70 nuclear-powered attack submarines, including 40-50 that are combat ready and of them no fewer than 20 attack submarines with cruise missiles for the naval engagement of the delivery systems of sea-launched cruise missiles and aircraft carriers (as many as 15 of them combat ready). Today we have a certain number of nuclear-powered submarines that adequately correspond to current requirements but to maintain this extremely important component service of the Navy it is necessary to build a large series of up to 30-40 new attack submarines.

Besides nuclear-powered submarines, taking into account Russia's physical-geographic characteristics and geostrategic position, it is expedient for the general-purpose forces of the Navy to have up to 30 (including 20-23 combat ready) relatively inexpensive up-to-date diesel-electric submarines that can sufficiently effectively handle missions in the near maritime zone of oceanic fleets and also in the Baltic and Black seas. The present submarines of projects 877 and 636 fully meet the contemporary demands on this type of ship. In the opinion of specialists, the indicated estimated number of nuclear and diesel attack submarines is the minimum number of them to be included in the "basic forces" of the Navy based on the necessity of guaranteeing the national-state interests of Russia in the next 15-25 years.

In considering surface ships, it is necessary to take a separate look at the aircraft-carrying ships in our Navy. The negative attitude toward them that has arisen in recent

years because of the conditions and that was supported by individual mass media, under which they supposedly "did not fit" into the defensive military doctrine of the Russian Federation, indicates the lack of a clear notion of their role and place in the handling of the tasks of the Navy. In contrast to the 15 aircraft carriers of the United States Navy in 1990 (or 12 in 2000), each of which has up to 60 attack aircraft and fighter bombers that are intended for offensive operations in key regions of the world and that are also a reserve of the strategic nuclear forces of the United States, the basic purpose of the aircraft-carrying ships of our Navy is to guarantee combat stability, above all of air defense and operational combined units of diverse forces of the Northern and Pacific fleets performing the missions set forth above. Without such coverage, in the event of combat operations even such a powerful, multifunctional, and mobile component of the military might of our Navy as are submarines will suffer unjustifiable and unacceptable losses and will not be fully capable of performing the assigned tasks. At the same time, the presence of aircraft-carrying ships increases by a factor of 1.5 to two the effectiveness of the actions of operational combined units of the Navy and significantly reduces combat losses. In an assessment under the "cost-effectiveness" criterion, the preservation of submarines as well as other important (including strategic) land installations of the naval forces, state administration, and the economy of Russia is tens or hundreds of times more costly than the building of a series of five or six such aircraft-carrying ships with 70-80 aircraft and helicopters on each of them. The indicated minimum essential number of multipurpose (air defense and antisubmarine) aircraft carriers is determined by the necessity of the continuous presence of no fewer than three or four of them in the combat-ready forces of the Navy, including one or two in the Northern Fleet and two in the Pacific Fleet.

In addition, considering the loss of strategic stability of basing and also the importance, length, and complexity of naval communications in the Baltic, in the North, and especially in the Far East, the dependable guarding and defense of maritime transport movements under military conditions requires another five or six convoy aircraft carriers (three or four of which are combat ready) with 30-40 aircraft and helicopters on board, including as many as 20-25 air defense fighters. Their distribution in the theaters is as follows: one in the Baltic Fleet, one or two in the Northern Fleet, and two or three in the Pacific Fleet.

Returning to the operational combined units of the diverse forces of the fleets, to guarantee the combat security of their core against air, missile, and submarine attacks by the enemy, they must include not only an aircraft carrier but also one or two guided-missile cruisers, two or three guided-missile destroyers, two or three guided-missile frigates, and one or two attack submarines. Thus, for the performance of these and other missions, it is necessary for the Navy to have 10-12 guided-missile cruisers (six to eight combat ready), 35-40 guided-missile destroyers (25-30 combat ready), and 40-50 guided-missile frigates (30-35 combat ready). In so doing, the attack submarines as well as

guided-missile cruisers and destroyers must also be armed with sea-launched cruise missiles comparable to the American "Tomahawks" (8-12 on submarines and 30-60 on cruisers and destroyers with a total number of 2,000-2,500). That is, the present backwardness of the naval in this contemporary component of naval arms must be overcome.

Some number of destroyers and frigates may be assigned to peacekeeping operations of multinational forces. For this purpose, and also to protect islands and remote territories in the Arctic and Far East (Sakhalin, Kurile Islands, Kamchatka, and Chukotka), the Navy needs to have 30-40 amphibious ships. Besides what has already been indicated, for the guarding and protection of Russia's interests in coastal waters of the adjacent 13 seas, including their shore, no fewer than 80-90 (50-60 combat ready) missile patrol boats and small guided-missile ships are needed. Naturally for the antimine support of their forces, they need to have at least 90-100 minesweepers. And certainly it is necessary to consolidate their success and to continue the development of the new type of supermodern, multifunctional, and exceptionally dynamic naval forces on the basis of the experimental surface skimmers "Lun" and "Orlenok."

Thus, by 2010-2015 we must have a navy that includes about 440 relatively up-to-date warships of all of the basic types, whereby half of them will be ships of the oceanic zone. (We remind you that the U.S. Navy, as the most up-to-date and balanced navy at the beginning of the 21st century, plans to have up to 330 ships of the oceanic zone.) At the same time, one must not forget that these rather large forces of ours must be distributed—unequally, to be sure—among four rather isolated and widely separated theaters!

Thus, even according to estimates, within 15-20 years we can continuously have about 300 up-to-date combat-ready ships, which is one-third their number in 1990 but two and a half to three times more in terms of their total combat potential for defensive operations on the seas. But only this will make it possible for our Navy to maintain approximate parity with the naval forces of probable coalitions in the event of the manifestation of hostility toward Russia on the part of individual countries in the main operational zones and to resolve tasks to prevent the unleashing of armed actions against us in maritime sectors, that is, to maintain dependable peace and stability.

In the article at hand, we are not concerned with assessments of the state and development of other component services of the general-purpose navy: reconnaissance, antisubmarine, and naval attack aviation; coastal missile forces and marines; forces and systems for operational, combat, and other kinds of support; fleet infrastructure (basing, ship repair yards, and systems for command, control, and communications); cooperation in operations with other branches of the Armed Forces; reform of naval education, manpower acquisition, the organizational personnel structure of the Navy, and so on. We

will say only that the answers to the urgent complex questions in their development likewise can be found only as a result of the modeling of combat systems, whereas others will require separate examination and study.

In conclusion, we would like to note that in the part of the present version of the military doctrine of the Russian Federation on the guaranteeing of the country's military security on the seas, it is written that is now necessary to "activate dialogue on the preparation and adoption of effective international agreements in the area of the reduction of naval forces and arms and the restriction of naval activity." But our country has always, especially beginning in 1984, repeatedly and persistently proposed to Western countries that they join in negotiations to resolve this problem. We put forward a number of initiatives to reduce military confrontation in the world ocean. Despite the fundamental changes that have taken place during this time in the geopolitical situation, however, this area remains practically untouched by the negotiation process and meanwhile the leading naval powers are continuing to increase the striking power of their navies.

It is precisely for this reason that we must immediately orient ourselves in three questions:

- What must be retained in the present Navy and how;
- The construction of what new ships must we resume in the next 10-15 years and in what quantity as the minimum admissible level for the dependable performance of the missions of the Navy;
- what new ships must be built in the next 20-25 years to replace those becoming obsolete and to guarantee the performance of the tasks in the protection of Russia's vitally important interests on the seas?

One must not fail to recognize that the approach of the leadership of the United States to the resolution of this problem is realistic and responsible. They set for themselves the objective of "maintaining the achieved superiority in military hardware." Further noting that the "deterioration of advanced weapon systems over time will doubtless nullify the meaning of our own arms as a deterrent and our competitive advantage in the means of warfare," they see the solution "in decisive actions aimed at maintaining our technical superiority...in a strategy of capital investments bound to protect us against uncertainty while at the same time giving future presidents the advantage of the flexibility that these most up-to-date systems can provide."

Returning to the above-mentioned fragment of our military doctrine involving the preparation and adoption of effective international agreements on the reduction of naval forces and the restriction of naval activity, it must be noted that real power is necessary so that they will not remain merely good intentions or empty rhetoric. Russia will be able to maintain its legitimate position as a great

naval power and the prospect of its development as a powerful and sovereign state in the 21st century only with the existence of a strong navy. And as the present situation shows, the transition to the new century will not be calm and cloudless for us. Therefore, so that Russia will not lag behind world progress, it is essential in a very short time to activate the remaining solid potential of professionals and to define what our national interests are and to what extent state security is guaranteed in an increasingly complex world. It is also necessary to elaborate the priority directions of the work on their unconditional achievement. Otherwise Russia will disappear as an independent state.

V-Adm Golosov Argues Case for Importance of Navy to State

95UM0353A Moscow *MORSKOY SBORNIK*
in Russian No 2, Feb 1995 pp 12-15

[Article by Vice Admiral (Retired) R. Golosov, Hero of the Soviet Union, professor, under rubric "Time and the Fleet": "An Important Attribute of the State"]

[FBIS Translated Text] The presence of territory under a state's jurisdiction serves as one sign of a state. Protecting its integrity as well as its own sovereignty is a most important function of the state, and it must have armed forces to accomplish this. There is no alternative to this for now. Therefore there probably is no need to try to prove that the Army and Navy remain a necessary attribute of any state under present conditions. They are established and maintained as an instrument of foreign policy and as a force ensuring the country's military security. And so statements by a number of our politicians and publicists, who frighten society by saying that the Armed Forces may act as a certain independent political force, a kind of supraclass structure uncontrollably squandering the taxpayers' money, are absurd. In my view, such a thing can be said only by Russia's enemies, who wish it to be further weakened and so are interested in discrediting this state institution as a force deterring all possible manifestations of overt and covert expansion of our country's foes.

And if we are speaking about the Navy, it is one of the most important components of the armed forces of any sufficiently developed state with egress to the sea, let alone the ocean. And as we know, Russia is one of three world countries whose shores are washed by the waters of three oceans and it is the absolute leader in the extent of maritime borders. In addition to high mobility, significant autonomy and great firepower, the importance of the naval component of armed forces is determined by the Navy's capability of operating beyond the limits of its state borders and, even in peacetime, accomplishing the country's foreign-policy power acts in ensuring its military and economic security. The need for having a capable Navy for our homeland is determined by the aggregate of a large number of objective and subjective factors. The state's geopolitical situation, the nature and

degree of development of the country's economy and the size of its population can be included among objective factors. And the presence and content of the state's national interests, its foreign policy concepts and the chief provisions of military doctrine stemming therefrom can be considered factors of a subjective nature. It is quite obvious that subjective factors are subject to swift changes in the shortest historical periods. But a system so difficult to establish and keep at the level of demands of modern times as the Navy must develop rather stably and on a planned basis, and so the transformation of subjective factors must be limited. They can be dictated only by substantial changes in the foreign and domestic situation and not by conjunctural voluntarism of the state leadership at each gyrations of a change of power. In this respect western countries, and the United States above all, demonstrate for us an envious constancy with respect to development of their navies.

Speaking of the content of subjective factors, it should be noted that their most important element is the state political leadership's assessment of the degree of military danger to the country and a determination of possible enemies and allies. Two polar viewpoints in the large spectrum of opinions on these questions can be seen clearly here at the present time. The first is that military danger does not exist for Russia, that no one threatens it and that all leading countries headed by the United States are striving to help Russia become a member of the club of developed world states with equal rights. The second viewpoint is that military danger persists for Russia and will exist in the foreseeable future.

It must be stipulated right off that while the powers that be are guided by the first viewpoint, all the talk about developing and upgrading the Armed Forces as a whole and the Navy in particular are of no significance for their decisionmaking. The Army and Navy will be weakened even further to the accompaniment of declarations of the need for their reduction and radical reform. Therefore before discussing problems of the Navy's revival and development and before figuring that this will be of practical benefit, one needs to be confident that state authorities are really concerned with ensuring the country's security militarily; otherwise they are obligated to persuade the people conclusively that there is no military danger, of any kind for the country and none is anticipated.

Let us take a most general look to see whether or not military danger exists for Russia. We will take military danger to mean a situation characterized by the simultaneous manifestation of the following three indications:

- substantial contradictions appear between our country and other states in particular problems;
- an opposing state (or coalition) has sufficient combat potential for solving its problems militarily;
- these states recognize the permissibility of using armed violence to attain their political goals, even if not in all, but only in certain cases.

Based on that understanding of military danger, it is obvious that it exists for Russia and will exist in the foreseeable future. I will summarize just four of what I view as causes which have shown up clearly now and which can lead to the outbreak of war in the world, including against Russia.

First. Having accomplished the task of getting rid of its chief rival thanks to disintegration of the USSR, the United States promptly (in contrast to us) defined its national policy goals more precisely under the new conditions. In particular, it declared that now it will not allow any kind of other superpower economically and militarily equal to the United States and threatening its national interests to appear in the world arena. The statements of a number of highly placed persons in the United States make it clear that this goes both for Russia and the CIS. We will note that the United States announced that decision personally, although most likely it is confident of its allies' unconditional support in this matter. But Russia remains a superpower even now, and when the crisis into which it has fallen has been overcome, its might, despite the "help" of such partners, not only inevitably will be restored, but even augmented, as already often has happened in our homeland's history. Without going into details of a possible scenario of development of events with the beginning of such a process, it is impossible to exclude attempts at a military solution of this problem under some kind of "plausible" pretext (if only of encouragement and assistance to separatism).

Second. In the assessments of specialists, the problem of exhaustion of raw material resources on the planet will make itself known already at the beginning of the 21st century. Meanwhile, the United States alone, where around six percent of the planet's population lives, consumes almost 40 percent of these resources. Other industrially developed countries also depend greatly on imports of raw materials. This problem also affects Russia, but it still remains an enormous larder for various raw material resources, which have not even been completely surveyed. Is it possible to exclude attempts at a power approach to dividing up resources in the world, including on continental shelves and in maritime economic zones?

Third. An exacerbation of ecologic problems, above all connected with recycling and burying industrial (including radioactive) byproducts dangerous to man and all living things. By its nature, the resolution of problems of preventing progressive pollution of seas and oceans and ensuring the safety of one's country against ecologic disasters (including those which have occurred in a neighboring state) and the like contains elements of conflict. Who will guarantee that the practice of resolving them will not lead to a sharp exacerbation of relations among individual countries right down to an attempt at their military resolution?

Fourth. Demographic problems. In the assessments of specialists, by the year 2000 the Earth's population will

exceed six billion. Demographers of a large number of countries (and not just of China, where the size of the population has gone over a billion and the problem of overpopulation already has arisen) now are speaking about the need to restrict its growth. And nearby is Russia with its sparsely populated Far East and Eastern Siberia and, moreover, with a tendency toward an overall reduction in its population of 150 million. Therefore a fully definite answer to the question of "What is to be done?" suggests itself. By the way, my observations during a recent visit to Khabarovsk and Komsomolsk-on-Amur permit me to conclude that a "quiet" (for now) settlement of our Far East by the Chinese already is under way, which by now cannot help but disturb the local authorities.

Nevertheless, it can be said that there is really no direct military threat to Russia today, but the statement that it cannot arise, and suddenly, in the not-too-distant future can be made either by people who are under a delusion or people who are pursuing strictly selfish ends. For while actively welcoming the reduction of our Armed Forces (including the Navy) and the decrease in their combat potential, the United States and its allies continue to upgrade their own military forces, above all their navies, which permits them to increase their navies' combat effectiveness as a whole even with a certain reduction in size of the ship order of battle. They also (in contrast to us) are not reducing their activeness off Russia's shores, as indicated by ceaseless numerous instances of foreign submarines and surface ships being discovered there.

Those briefly are today's realities if we are speaking of military danger to Russia, including from sea and ocean sectors.

So much already has been written and said about the need for Russia to have a strong Navy that it makes no sense to repeat it. Therefore let us dwell briefly only on the above factors, from which by their assessment the state leadership determines the need and possibility for developing the Navy.

Our country's geopolitical position unequivocally requires the presence of a capable Navy, and its forces must be distributed to five separate areas—North, Far East, and the Baltic, Black and Caspian seas.

Russia's economic situation today is precatastrophic. In the assessments of those who spoke at State Duma hearings on problems of the Navy three months ago, in the next few years the shipbuilding industry will lose the capability of building the main types of modern ships if effective steps are not taken immediately. Moreover, a loss of unique shipbuilding cadres and a reduction in the potential of design bureaus is occurring. As a result, our Navy will be doomed to decades of a lag behind the level of navies of other world states, a lag difficult to restore, with all consequences stemming therefrom.

The size of Russia's approximately 150 million population permits ensuring the necessary numerical strength

of the Army and Navy. A drop in prestige of military service, a significant reduction in draft contingents because of ill-conceived lawmaking, a decline in the educational level of the youth and an increase in the number of persons with physical development deficiencies are problems. And bringing young people into contract service is complicated by the impossibility for now of providing them with normal conditions of service and of life outside of service.

With respect to subjective factors, matters are not a bit better here, if not worse.

What are Russia's national goals? What kind of state are we building? And it is not at all a matter of by what "ism" to call that which we intend to create, but of precisely formulating this goal and of having a real majority of the people approve it. For by not having a national goal that is clear and understandable to the people, the country is doomed to mark time or rush hither and yon, i.e., to a disastrous loss of pace in its development. This problem appears especially important to me not only for the development of our Army and Navy, but also for their very existence today. One can of course try to establish strictly all-volunteer, apolitical, nonreligious armed forces, but one hardly should nourish illusions with respect to their combat effectiveness. The entire history of the Russian and Soviet Army and Navy attests that its brightest achievements were based on the faith of officers, soldiers and sailors in the sanctity of the cause of protecting the Motherland and in the correctness of those missions assigned to them. Therefore should not the authorities be placed on guard by questions which have appeared in the Navy of late: "Whom do we serve?" "For the sake of what?" "What is the Motherland today and whose is it?" Precise, clear answers are needed to them already today!

About the conception of Russia's foreign policy—possibly the President, the Government and Ministry of Foreign Affairs leadership have an idea about it, but its conception affects the interests of every person in the country and, as a minimum, all those who serve in the Armed Forces. And that is why it must be known, publicly discussed and approved by Parliament as a minimum. The very same also can be said about military doctrine: then the naval component would not have been so rashly overlooked in it.

That is a very cursory survey of those principal factors which authorities must assess in expecting to develop the state's naval might. I dare say it is difficult to add anything to the conclusion drawn at the October 1994 State Duma hearing already mentioned. In particular, the concluding document of the hearings states: "With the existing situation of support, upkeep and organizational development of the Navy kept unchanged, a large part of the makeup of naval forces will be lost already in the latter half of the 1990's. Russia's loss of the Navy will lead to an unpredictable drop in its authority and influence as a great power. This cannot be allowed."

The present situation has only one positive point from the standpoint of a revival of the Navy—the opportunity to take into account the large number of mistakes previously made. In my view, one of the biggest mistakes among them was that the Navy was not created as a unified combat system, balanced in all its component subsystems. As a result we received a collection of ships of different classes, some of which, taken individually, were models on a world level. Under present-day conditions, however, ships do not conduct combat operations individually, but as part of formations and groups, where it is important that the ships making them up have command and control systems that can be interfaced, standardized weapons and power engineering, and so on. We received superb individual models of long-range weapons, but did not have means of reconnaissance and target designation with that range. Outstanding ships were built, but ship repair facilities were quite insufficiently developed, because of which there was a growing line of ships needing scheduled repairs. Sufficiently developed berths were not built, because of which the newest ships expended valuable engine time even standing in base. Everyday problems were solved very slowly, which considerably undermined the state of navymen's morale, led to a separation of the personnel afloat and flight personnel from professional training, and forced devoting more time to solving everyday and administrative problems than to operational and combat training. I am not even speaking of the fact that almost all categories of fleet personnel were working under conditions of considerable mental and physical overloads without full-fledged, regular rest.

That somewhat one-sided development of our Navy largely was the result of the work of Admiral of the Fleet of the Soviet Union S. G. Gorshkov for almost 30 years in the post of CINC Navy. There is no question he was an outstanding individual and did much for the Navy's development, for its emergence onto the World Ocean, and for elevating the Navy's prestige inside and outside the country. But in the matter of Navy organizational development the old approach was retained, where the CPSU Central Committee and Government would adopt and approve only a shipbuilding program, although already long ago they should have been working out a Navy development program for a certain period of time, a program which would have encompassed all aspects of its functioning as a unified combat system and was supported by appropriate financing.

True, it must be emphasized here that for essentially the entire postwar period the Navy was subordinate to the Ministry of Defense, whose leadership traditionally was Army and, very regretfully, far from always delved deeply into Navy problems, and that is why it did not always react adequately, to put it mildly, to navymen's suggestions. This problem was reflected in the course of State Duma hearings on the status of the Navy. The opinion was heard several times in presentations about the advisability of reviving a separate Ministry of the Navy, but resolving this question requires a very

weighed approach. But proposals on the need to approve a program for construction and development of the Navy at the highest—state—level and about singling out expenditures for the Navy in a separate, protected line of the budget did not meet with a single objection.

Thus the fact that the Navy is a necessary attribute of the Russian state, an instrument of its foreign policy and one of the most important components of the country's Armed Forces in ensuring its military security is fully obvious. The very same also can be said with respect to the existence and preservation of military danger to our homeland over the near term. And the specific nature of Navy organizational development and of its preservation at the level of demands of modern times shows that it is very difficult (and essentially unrealistic in the course of military conflicts) to correct mistakes made in this matter. The Navy must be created as a unified combat system, having all its component subsystems fully balanced. The state's political leadership bears responsibility for assigning missions to the Navy and making decisions on the makeup of forces and on realization of plans for its development for a sufficiently long period. Therefore it remains to express the hope that, despite present difficulties, the state's national interests will dominate in the course of Russia's rebirth as a Great Power, and then our Navy's tricentennial will be marked by the beginning of a new stage in its development.

Black Sea Fleet Officers' Letter to President

95UM0410B Moscow MORSKOY SBORNIK
in Russian No 3, Mar 95 pp 35-36

[Open letter from the officers of the Black Sea Fleet to President of the Russian Federation Boris Nikolayevich Yeltsin]

[FBIS Translated Text] Comrade supreme commander of Armed Forces of the Russian Federation!

Esteemed Boris Nikolayevich!

Exceptional circumstances compel us to appeal to you personally rather than going through all of the higher channels.

In our opinion, the materials published in the press on the course of the most recent negotiations of the Russian and Ukrainian delegations in Kiev are nothing more than another step back from what was previously achieved in deciding the fate of the Black Sea Fleet.

Moreover we, military people who are not accustomed to diplomatic language, will say right out: the Declaration on Principles for the resolution of the problem of the Black Sea Fleet that has been prepared for signing is a blatant betrayal of the idea of the unity and indivisibility of the fleet, an idea with which the members of the Black Sea fleet—and not just we—have lived recently.

Can it really be that those who have been entrusted with the negotiations do not yet understand that all the steps

aimed at the division of the fleet and the shore infrastructure are inadmissible and are the end of it? Not only that, this is neglect of national interests and a weakening of the position of Russia and the states of the Commonwealth in the Black Sea. Finally, this will be a personal tragedy for additional tens of thousands of citizens of Crimea and Sevastopol, for people of many nationalities, and for those called from various places who have permanently linked their fate with the life of the fleet, the consequences of which may be unpredictable. Ukraine's agreement to the basing of the Russian Fleet in Sevastopol is no more than a nice gesture, just are today's words about friendship and cooperation between Slavic peoples, which, unfortunately, are most often utilized for the manipulation of the public consciousness. The reality in which we are now living indicates something else. Today we are already being put in the framework of servicemen of a certain foreign army temporarily located in the territory of the state of Ukraine. And there are practical actions confirming this. You cannot fail to know this.

Of course it is not our business to be involved in politics. But just as all Russians, and not just them, we cannot fail to raise some obvious questions.

1. Why and in whose interests is everything that was previously done by working groups under the leadership of Yu. Yarov and Yu. Dubinin now being crossed out all at once?
2. Why, in contrast to the other side, is no one utilizing the representatives of the Black Sea Fleet even as experts?
3. Why is no attention being paid to the opinion on this question of the fleet sailors, the members of their families, and the inhabitants of Sevastopol and of Crimea as a whole that has repeatedly been noted in official documents (decisions, statements, declarations, appeals, and surveys)?
4. Finally, why are we not being given basic information on the decisions that are being made? Where are the texts of these extensive agreements, about which the people have not yet been informed?

Unfortunately, the set of questions is not limited to what is enumerated above. The problems of citizenship for the native Crimeans, who make up 70 percent of the fleet, difficulties with financing and material-technical supply, and morale problems undermine the faith of the members of the Black Sea Fleet in the righteousness of their cause and in the necessity of the existence of the Black Sea Fleet for today's Russia.

But if we really are not needed, then tell us this frankly. Do not make us take part in the sacrificing of our child, which is what the fleet is for all of us, and thereby rejoice that we have the opportunity to choose our place of service. The overwhelming majority of us already made this choice once, three years ago. And the choice was in favor of the existence of a unified and indivisible Black Sea Fleet. We stand on this and will continue to do so.

Boris Nikolayevich!

We appeal to your great wisdom and ask you to consider the opinion of the officers of the Black Sea Fleet and citizens of Crimea and Sevastopol and the official position of the president of Crimea, Supreme Soviet of Crimea, and Council of the Federation of the Russian Federation in the final elaboration and signing of the documents on the fate of the fleet. The Black Sea Fleet has successfully performed tasks in the protection and defense of the southern maritime boundaries of the Fatherland for more than 210 years. And today it is prepared to do this in the interests of the peoples of Ukraine, the Russian Federation, and other states of the Commonwealth. Our honor and word as officers is the guarantee of this.

[Signed] The Coordinating Council of the Assemblies of Officers on behalf of the officers of the Black Sea Fleet
20 February 1995

Evaluating Effectiveness of Integrated Use of Detection Equipment

95UM0353C Moscow MORSKOY SBORNIK
in Russian No 2, Feb 1995 pp 44-46

[Article by Captain 1st Rank V. Shpak, doctor of military sciences, professor, and Captain 2nd Rank V. Popovich, candidate of technical sciences, under rubric "Questions of Theory"]

[FBIS Translated Text] The modern detection equipment with which the Navy's mobile search forces (submarines, surface ships and aircraft) are equipped have great capabilities for detecting fields of a varying physical nature created by naval targets. The entire set of such equipment can be divided into two groups, with the principle of interaction of the target's fields with the marine environment serving as the basis for inclusion in the groups.

In the first of these groups we will include equipment which registers primary and/or secondary fields of targets, i.e., when fulfillment of the following conditions is necessary for their detection:

- a certain field (for example, sonar, electromagnetic and so on) is generated by the target itself or is generated by the detection equipment (for example, sonar, radar);
- the target is within a certain distance where the signal level in the detection system exceeds a certain threshold for its discrimination.

In the other group of detection equipment we will include equipment which can record the fact of a target's presence as a completed event based on its deformation of the medium's existing fields, i.e., such equipment is

capable of detecting the target's "trace." Such equipment can include gear which registers changes in parameters of optical, radiation, gravitational and a number of other fields caused by the presence and activity of naval targets.

To evaluate the effectiveness of detection equipment it is customary to use a generalized characteristic of it such as a surveillance zone, which, for equipment belonging to the first group, usually appears in the form of a circle or elements of a circle in the Cartesian system of coordinates. And detection equipment belonging to the second group is characterized by the capability of registering the "trace" of a target, which can be approximated in various ways, from a line to an irregular figure.

Search effectiveness using the first group of equipment is evaluated using the well developed moving target search theory. To evaluate equipment of the second group, the Buffon problem of the needle and parallels is solved to determine the effective projection of the target trace on a line perpendicular to the observer's direction of movement, and then traditional search theory procedures are applied. But difficulty arises in attempting to evaluate the effectiveness of integrated (simultaneous) use of equipment belonging to different groups present on one platform. Therefore we will examine a variation of a solution to this problem.

Let us assume that in a certain given area observer *Obs* equipped with system S_1 and system S_2 , belonging to the first and second groups of detection equipment respectively, performs a search for moving target *Tgt*. *Obs* proceeds on a certain given course K_{Obs} and speed V_{Obs} , while viewing a strip $W=2D_{Obs}$ wide using S_1 .

Let us assume that target *Tgt*, which has entered the coverage area of S_1 , is detected with probability $P=1$, i.e., we will figure that W is the effective width of the search strip. In that case one can assert that if *Obs* intersects the track of *Tgt*, the latter can go undetected only if it did not enter zone W before this, since according to the accepted condition it would have been detected using S_1 . The following question arises here: Where can *Tgt*, whose track was intersected by *Obs*, be located if *Tgt* itself did not pass through the surveillance zone of S_1 ?

To answer this question, this problem can be reduced to a specific tactical maneuvering problem: calculate the sector of possible courses of *Tgt* on which it can intersect the course of *Obs* on the bow and at the same time is within a certain given range. In accordance with the problem posed, we will consider this to be the length of track $D_{Trk}=D_{max}$, which we will approximate with a line. In this case the general scheme of constructing the probable target position area is shown in Fig. 1. We will use supplementary Fig. 2 to explain the principle of constructing the probable target position area.

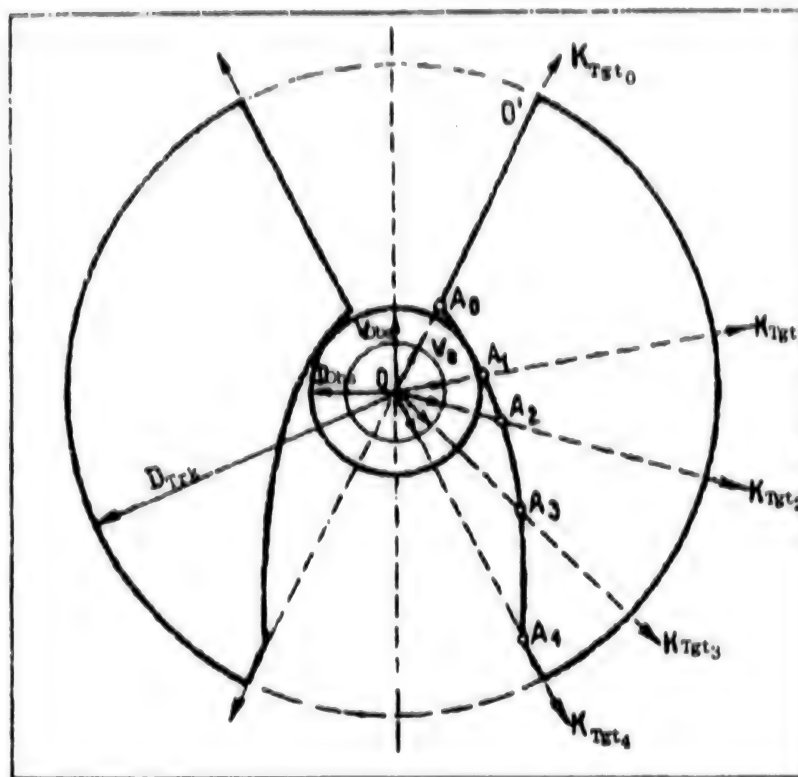


Fig. 1.

This shows the familiar triangle of velocities:

$$V = V_{Obs} - V_{Tgt}$$

where: V_{Obs} is the velocity vector of Obs;

V_{Tgt} is the velocity vector of Tgt;

V is the relative velocity vector of Obs.

Direction ψ denoted in Fig. 2 denotes the angle between K_{Obs} and the true value of $K_{Tgt(0)}$.

Assuming that by the moment the search began observer Obs was stationary at point O, we will note that on the line of the search target's course $K_{Tgt(0)}$ segment $OO' = D_{Trk}$. Then with the beginning of his movement with given K_{Obs} and V_{Obs} , the set of all relative movement lines [RML] from RML_O^0 to RML_{lim}^0 represents possible routes of target entry onto segment OO' or, in other words, these are situations of an intersection by observer Obs of the course of target Tgt on its stern in a distance of no more than D_{Trk} . It is apparent from Fig. 2 that a portion of these relative movement lines may intersect the area limited by radius D_{Obs} , and a certain critical RML_O^{cr} , being tangent to it, separates those relative movement lines which intersect and which do not intersect this area. In turn, this tangent's intersection with direction $K_{Tgt(0)}$ will give point A_0 , and segment OA_0 will be that minimum distance which search target Tgt can be at without having entered the area D_{Obs} , and

$OO' = D_{Trk}$ is the maximum distance at which it is possible to detect it from the trace.

Let us examine a graphic-analytical solution to this problem, by which we will determine the maximum and minimum possible values of target courses $Tgt(K_{Tgt(max)})$ and $K_{Tgt(min)}$ limiting the probable target position area.

To determine $K_{Tgt(max)}$ let us examine Fig. 3.

From $\Delta OF'O'$ $\sin X = D_{Obs}/D_{max}$, but since according to condition $D_{max} = D_{Trk}$, then $\sin X = D_{Obs}/D_{Trk}$, whence $X = \arcsin(D_{Obs}/D_{Trk})$. [1]

In turn, from ΔOAF $\cos Y' = OF/V_{Obs}$, and from ΔOBF $OF = V_{Tgt} \sin X$. Substituting the values OF and $\sin X$, we will obtain $\cos Y' = V_{Tgt} D_{Obs} / V_{Obs} D_{Trk}$, whence $Y' = \arccos(V_{Tgt} D_{Obs} / V_{Obs} D_{Trk})$. [2]

At the same time, it is apparent from the figure that $K_{Tgt(max)} = K = Y' + Y$, and $Y = 2 - X$, whence $K_{Tgt(max)} = \arccos(V_{Tgt} D_{Obs} / V_{Obs} D_{Trk}) - \arcsin(D_{Obs}/D_{Trk}) + \pi/2$. [3]

But as is apparent from expression [3], correctness in solving this problem necessitates fulfillment of the condition:

$$D_{Obs}/D_{Trk} \leq 1 \text{ and } V_{Tgt} D_{Obs} / V_{Obs} D_{Trk} \leq 1. [4]$$

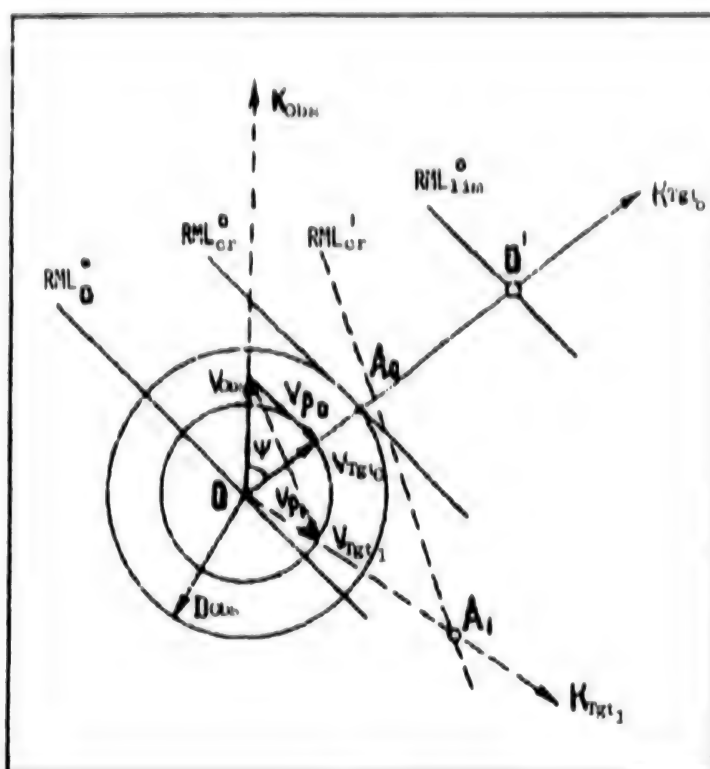


Fig. 2.

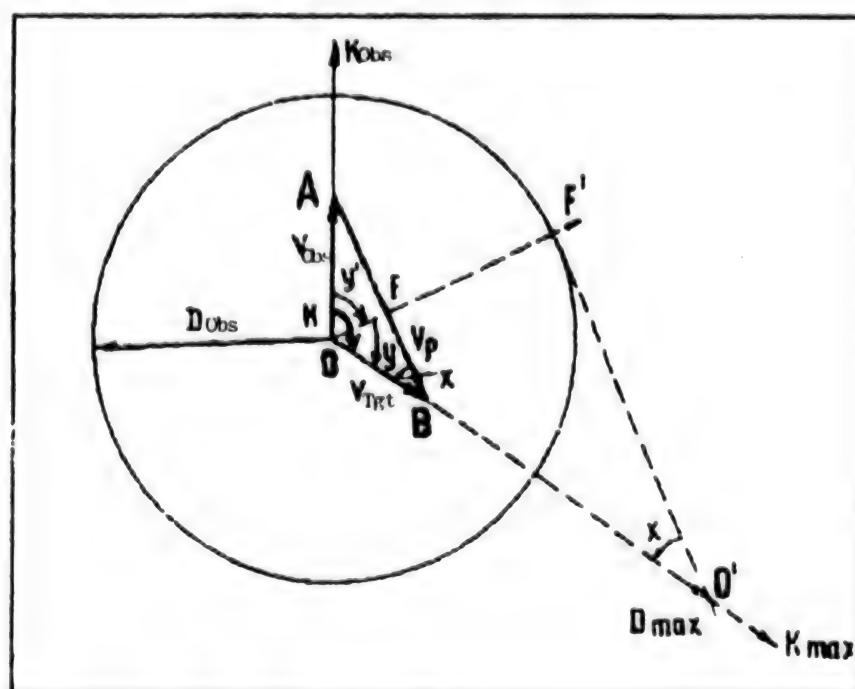


Fig. 3.

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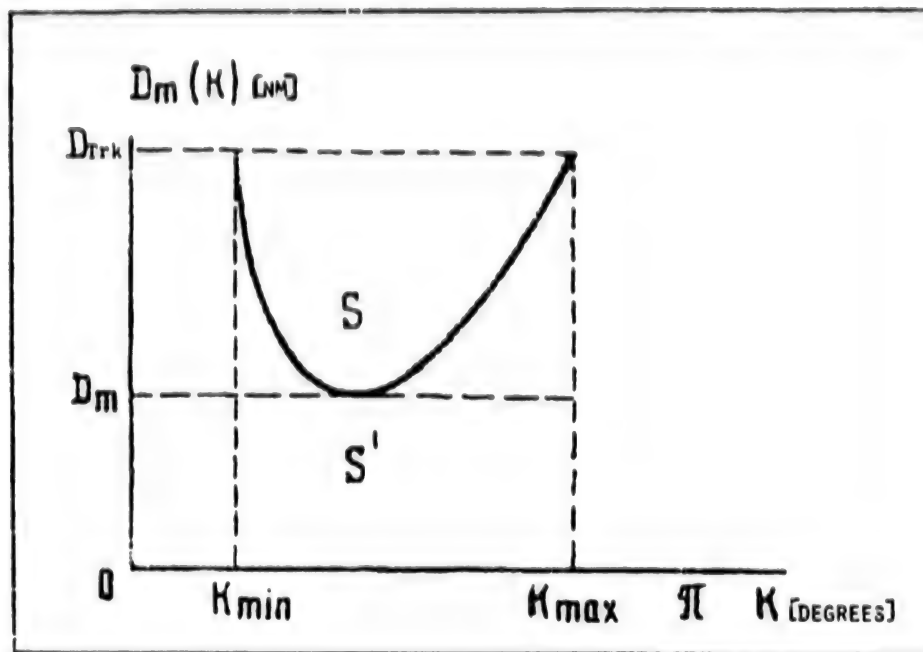


Fig. 5.

For simplicity let us examine here only the interval $0-\pi$, which corresponds to a starboard observation. It is apparent from the figure that the area under curve $D_m(K)$ can be determined as follows:

$$S' = \int_{K_{Trk(min)}}^{K_{Trk(max)}} \frac{D_{Trk} V_p}{V_{Trk} \sin K_i} dk.$$

Then the unknown area of the probable target position area equals: $S = D_{Trk} 2K - S'$, where $D_{Trk} 2K$ is the area under line D_{Trk} and $K = K_{Trk(max)} - K_{Trk(min)}$.

The problem of calculating the probable target position area is realized in the form of a mathematical model in the MS-DOS (Turbo Pascal) operational environment.

In conclusion let us examine the procedure for constructing the probable target position area on the Sh-29 maneuvering board (Fig. 6).

In the center of the board we will plot the velocity vector of observer Obs (as an example let us take $V_{Obs} = 12$ kts). We will assume that the expected velocity of search target $V_{Trk} = 6$ kts. We will denote by radius $D_{Obs} = 5$ nm

the area of effective target search by system S_1 . Let us suppose that we have been given or have calculated the value $D_{Trk} = 10$ nm.

We will plot vector V_{Trk} on line $K_{Trk(0)}$ and will find the relative velocity vector V .

Parallel to it we draw a tangent to circle D_{Obs} . Its intersection with line $K_{Trk(0)}$ will give point A_0 . Approximately every 10-20° we plot the value of the new possible course $K_{Trk(i)}$. We find the new relative movement vector and construct a new tangent to D_{Obs} . At its intersection with $K_{Trk(i)}$ we find point A_1 . We proceed similarly to find points $A_2 \dots A_3$. Interconnecting them with a line, we will obtain the lower boundary of the unknown probable target position area. The discreteness with which values of $K_{Trk(i)}$ are selected depends on the requisite accuracy of constructing the probable target position area.

These are the foundations of one possible method of evaluating the effectiveness of integrated use of different detection equipment. And based on the fact that at the present time development of new detection equipment continues here and especially abroad based on different physical principles and its placement within limits of one platform, in our view there is a growing requirement for theoretical and practical development of such a class of problems. It also should be noted that posing such a problem requires an adequate solution and requires different kinds of optimization problems.

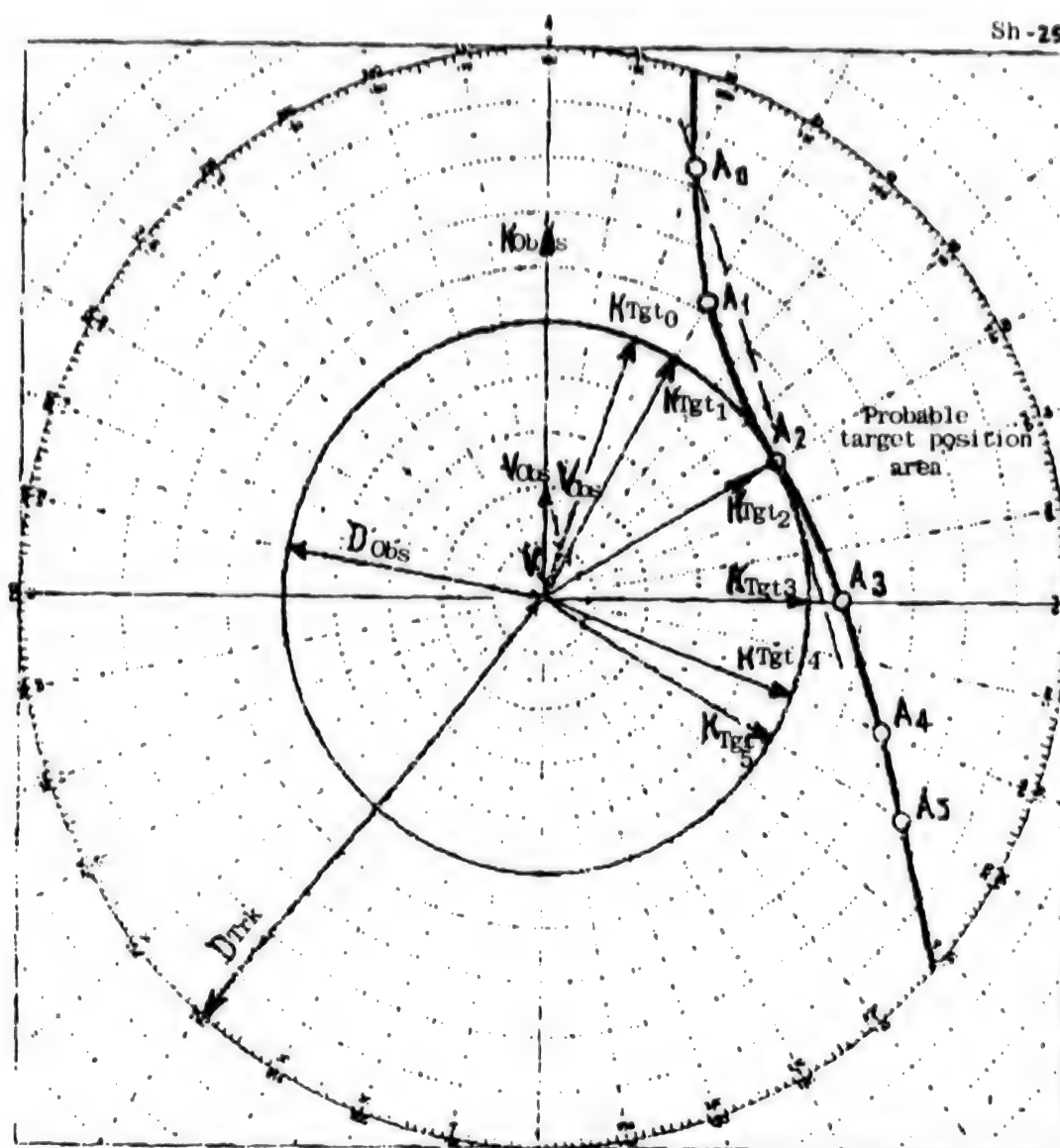


Fig. 6.

On Status of Caspian, Azov Seas

95UM0353B Moscow MORSKOY SBORNIK
in Russian No 2, Feb 1995 pp 16-19

[Article by Captain 2nd Rank A. Aleksandrov under rubric "On Russia's Maritime Borders": "On the Question of the Status of the Caspian Sea and Sea of Azov"]

[FBIS Translated Text] Following the Soviet Union's disintegration, a number of problems arose on Russia's maritime borders connected with their new demarcation and with a determination of the legal status of various sea expanses.

It should be noted that there is no complete clarity in these questions now in a single one of our country's outlying areas, including on maritime borders which have remained the same in the northern and eastern parts of the state. A certain vagueness in these sectors previously was compensated by strict observance of the status quo with respect to the USSR's possessions, but now some neighbors evidently believe the time has come for their revision. And if we are speaking about our western and southern maritime boundaries, the situation there has changed cardinally in light of events of recent years. Naturally, all the above requires special and rather complicated work to be done in this area, but while some

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work is being done on the first three of those directions by federal agencies, above all the Ministry of Foreign Affairs, in my view this cannot be said of maritime borders in the south of Russia. Meanwhile, such an approach with respect to the Caspian already has produced its negative results.

Here is some brief historical information. Toward the end of the reign of Peter I, the border of the Russian Empire ran in such a way that Caspian waters were completely in its possession, since the Persian areas of Gilan, Mazandaran and Asterabad situated on the southern shore of this sea were part of the Empire. But subsequently, as a result of a number of wars between Persia and Russia in the 18th and 19th centuries, the border between them changed frequently and the south coast of the Caspian again was transferred to Persia.

Nevertheless, under the Gulistan Peace Treaty, which summed up results of the Russo-Persian War of 1804-1813, Russia was granted exclusive right to have a naval fleet on the Caspian. Later the Turkmanchai Peace Treaty (after the conclusion of the Russo-Persian War of 1826-1828) confirmed Russia's exclusive right to have a naval fleet here, as well as complete freedom of commercial navigation, and Article 8 of the Treaty deprived Persia of similar rights. It was this Treaty that was the basis of Russo-Persian relations right up until the Great October Socialist Revolution.

A new treaty between the Russian Soviet Federated Socialist Republic and Persia signed by the RSFSR Government on 20 March 1921 announced the revocation of all treaties, conventions and agreements concluded by the former Czarist government with Teheran; it declared that they belittled the rights of the Iranian people. The 1828 Turkmanchai Peace Treaty, which deprived Persia of the possibility of having a fleet on the Caspian Sea, also was revoked. In the newly concluded Treaty (Art. 11) the Russian party recognized Persia's right to sail the Caspian Sea freely under its own flag, but at the same time stipulated that in the interests of security on the Caspian Sea there would be no citizens of third powers in the crews of Persian vessels who were taking advantage of their presence in the Persian fleet for purposes unfriendly toward the RSFSR (Art. 7). It should be noted that this document makes no mention of any kind of demarcation of Caspian Sea waters.

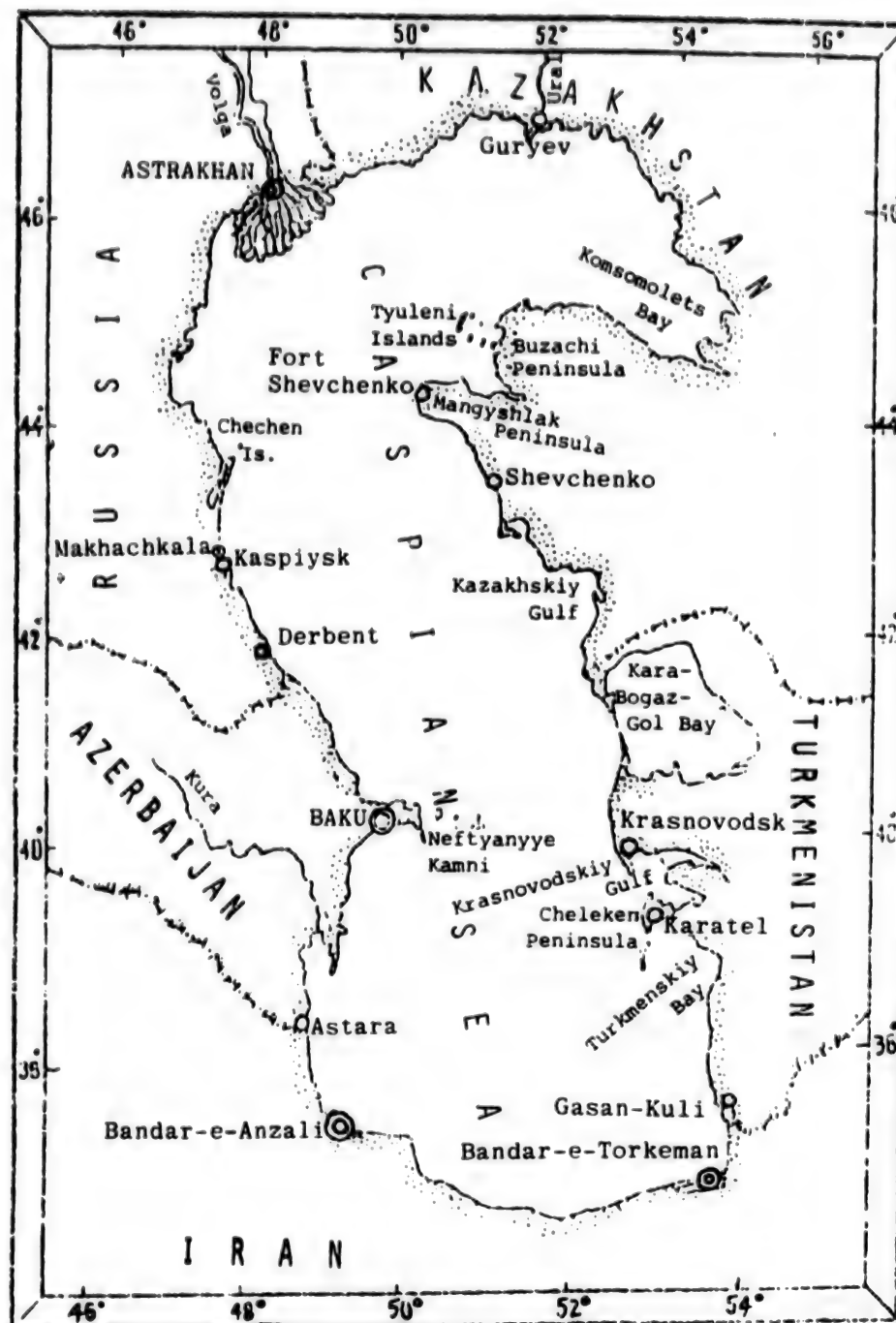
Subsequently, concerned with seeing that its peace initiative not be used to the detriment of good-neighbor relations of the USSR and Persia, our government, in a note of 1 October 1927 concerning the status of the port of Pahlevi, proposed recognizing the Caspian Sea as exclusively Soviet-Persian. This thought subsequently was concretized in a Convention Between the USSR and Persia on Settlement, Trade and Navigation concluded in Teheran on 27 October 1931. At that time it was directly written in Article 16 that "throughout the Caspian Sea there can be only vessels belonging to the USSR or Persia."

But these documents too made no mention of any kind of demarcation of the Caspian Sea. This subject was broached for the first time in the 1935 Treaty Between the USSR and Iran on Settlement, Trade and Navigation. Its Article 4 pointed out that "each of the Contracting Parties retains for its own flag fishing in waters washing its shores out to ten nautical miles..." This same provision was confirmed in the 1940 Treaty on Trade and Navigation Between the USSR and Iran, where it was again emphasized that "throughout the Caspian Sea there can be only vessels belonging to the Union of Soviet Socialist Republics and Iran..." But the absence of precise provisions on a demarcation of the Caspian Sea created certain difficulties in guarding the border.

As a result, back in November 1934 the USSR NKVD sent a letter to the USSR NKID [People's Commissariat of Foreign Affairs] proposing to regard a line running straight from Gasan-Kuli to Astara-chay as the state border on the Caspian Sea, with which the People's Commissariats of Defense and Water Resources of the USSR agreed. In its response the NKID declared that, as an internal instruction not to be disseminated, this line could be considered as dividing our waters from Iranian waters. But even at this time no government decision of any kind was made on this question, which is why the Gasan-Kuli/Astara-chay line was recognized by us strictly on a unilateral basis as an arbitrary border line on the Caspian Sea, although it was on that line that its control was organized by maritime border forces beginning in 1934.

Thus the Caspian essentially was recognized as a closed body of water with a unique legal regime. It could have been called the "Soviet-Iranian Sea of Confidence," since there was no juridical confirmation of its existence despite control of the arbitrary border line by border personnel. And only with the Soviet Union's disintegration, when new sovereign states formed on its shores, did a new international-law situation arise. In this connection problems immediately arose of a defense nature, of economic security, of regulating conservation of the sea's biological resources and of ensuring safety of navigation. Thus, all present questions of coastal states' cooperation in the sphere of use of the Caspian lie in the plane of determining the legal status of this sea.

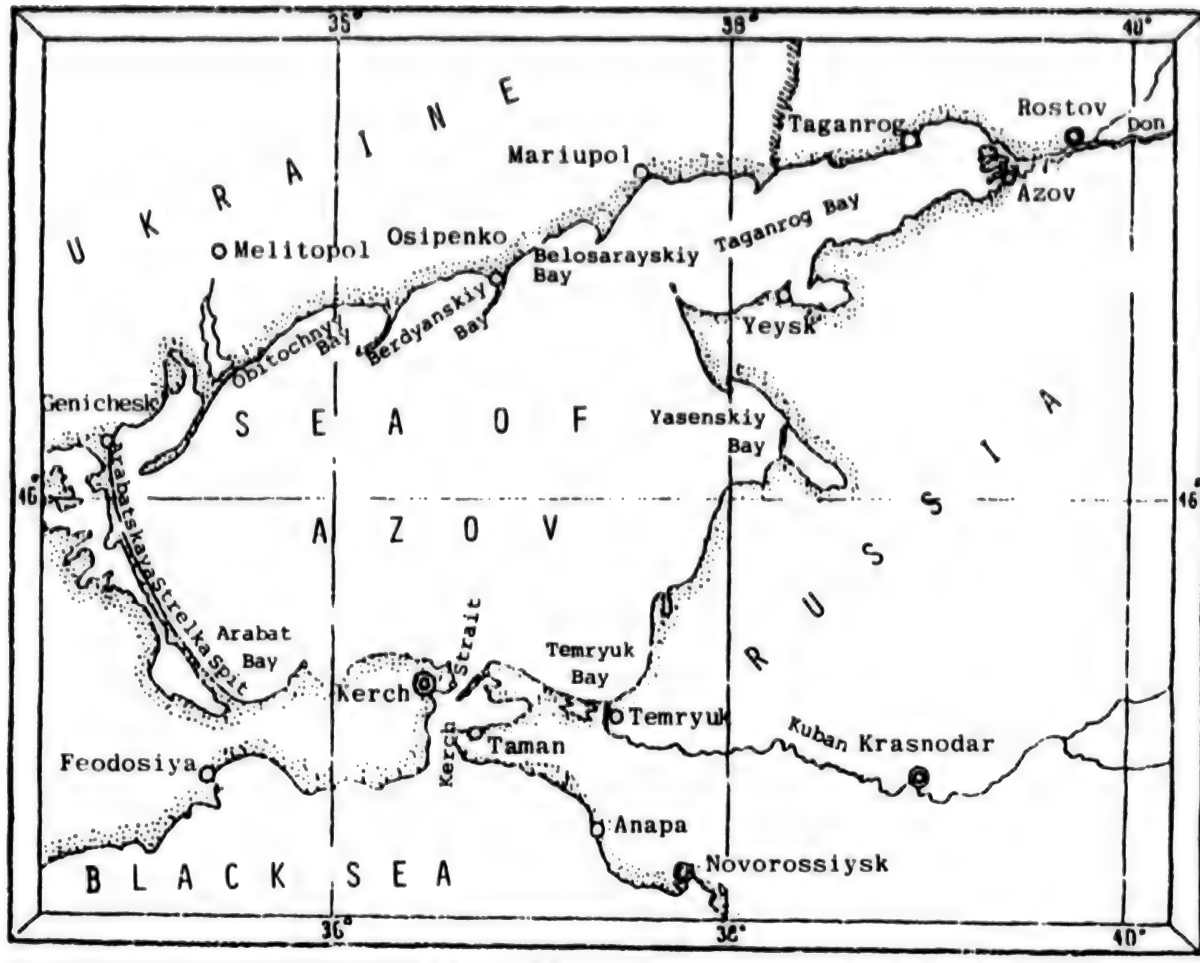
In terms of its geographic position, it represents a natural body of water which is not part of the ocean, which has no direct connection with other seas, and which has its own hydrologic and climatic regime and a slow water exchange. In general there are more grounds to call this sea, which is located within one continent and surrounded by the territories of several states, a lake, and so mechanically extending rules of contemporary international maritime law to its waters appears unacceptable. The traditionally used name "Caspian Sea" formed exclusively by virtue of the expanses of this water area and has no strict terminological, let alone legal, base beneath it. It was the Caspian's isolation from the World Ocean that at one time determined the special



approaches of coastal states to forming its legal regime. Evidently it is advisable to preserve that approach, especially as, with Azerbaijan's entry into the CIS, an opportunity appeared to stabilize the balance of political, economic and defense interests of parties which existed up until now under the 1921 and 1940 treaties, having in mind the relations with Iran of CIS countries opening onto the Caspian.

But attention should be focused on the fact that in the course of 1993-1994 negotiations on the problem of fishing in this sea, the new countries on the Caspian expressed the intent to establish their own coastal fishing zones: Azerbaijan 30-40 nm wide, Kazakhstan 25 nm and Turkmenistan 20-25 nm. In that case the actual steps they are taking can lead to a situation very unfavorable to the interests of Russia's security—to a

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division of the Caspian water area into sectors under full and exclusive sovereignty of coastal states, with the establishment of internal and territorial waters and other categories of sea expanses envisaged by the 1982 UN Convention on the Law of the Sea, where measures can be carried out that have not been coordinated with neighbors, and for geographic reasons the Russian sector will be the smallest.

Turkmenistan's adoption of a law which declares 12-nm territorial waters and an exclusive economic zone extending right up to future borders with opposite and contiguous states serves as confirmation of such a prospect. Kazakhstan also is actively promoting a draft Agreement on Development of Natural Resources of the Caspian Sea, which envisages a division of the entire Caspian shelf among coastal countries. And Azerbaijan, as we know, already concluded the "contract of the century" with very large western companies in July of last year for development of the Caspian's offshore oil deposits. So the problem of this sea's status and demarcation is not as simple as it may seem at first glance and requires careful analysis and a serious negotiating process.

Meanwhile, in addition to egress to the Caspian Sea, Russia has egress to the Black Sea and Sea of Azov in the south. And unresolved questions also exist here of a delimitation of the economic zone and continental shelf with Ukraine and Georgia. But from all appearances, while the question of demarcation of maritime waters in the Black Sea will not generate special complications either with Ukraine or with Georgia, resolution of the question of the Sea of Azov is not so simple and can substantially affect Russia's interests, including defense interests. Well then, just what is the problem of the Sea of Azov?

Again a little history. The Ancient Russian name of the Sea of Azov was the Surozhskoye Sea and its overall area is 38,000 km². Two major navigable rivers of Russia, the Don and Kuban, flow into it and it is linked with the Black Sea by Kerch Strait, which is 41 km long, 4-15 km wide and 5-15 m deep. This sea and Kerch Strait were USSR internal waters up until 1991, but with the formation on their shores of two independent states, the Russian Federation and Ukraine, under international laws they lose the status of internal waters.

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Considering this sea waters between Ukraine and Russia can be demarcated in accordance with conventional rules of maritime law. For this, baselines are determined from which the width of territorial waters of each of those states is measured. Then the border of the economic zone and continental shelf between those countries will run along a median line drawn in such a way that each of its points is equidistant from the nearest points of the baselines. But this means that beyond limits of territorial waters of both states, all kinds of freedoms of commercial and, most important, also military navigation will be exercised by all foreign vessels and ships. Then both Russia as well as Ukraine will be able to exercise only the following, each in its own economic zone:

a. Sovereign rights for exploring, exploiting and conserving the natural resources (living and nonliving) in waters superjacent to the seabed, on the seabed and in its subsoil, and with respect to managing these resources and other kinds of activity of economic exploration and exploitation of that zone such as energy production by use of water, wind and current;

b. Jurisdiction with respect to the following:

- establishment and use of artificial islands, installations and structures;
- marine scientific research;
- protection and preservation of the marine environment.

Here a provision of the international law of the sea will come into force about unimpeded transit passage of foreign vessels and warships through Kerch Strait as connecting the waters of the Black Sea and Sea of Azov and receiving the status of a strait used for international navigation.

True, there is another option for solving this problem. With reference to special historical, economic and defense interests, Russia and Ukraine can arrive at an agreement on joint use of waters of the Sea of Azov and Kerch Strait as their own internal waters, which will preserve the administrative procedure of entry into the Sea of Azov for all foreign vessels and ships. Accordingly, with this the transit passage regime also cannot be applied to Kerch Strait as leading from the high seas into internal waters of these states. It appears that at the given stage, realization of such an option could lead to satisfactory resolution of an entire set of political, defense and legal problems of both states with respect to the Sea of Azov: from unity of Russia and Ukraine in defending their national interests to the world community's recognition of these states' historic rights to this sea. And the following can serve as examples of analogous decisions in international practice:

- joint establishment of internal (historic) waters by Argentina and Uruguay in La Plata Strait;
- joint establishment of historic waters by India and Sri Lanka in Palk Strait, Palk Bay and Gulf of Mannar (the status of internal waters has been given to Palk Strait and Palk Bay, and the status of territorial sea to the Gulf of Mannar);

- joint establishment of internal waters by Vietnam and Cambodia in sea waters limited by Phu Quoc Island and Thotu Archipelago;
- determination of the affiliation of waters of the Gulf of Fonseca beyond limits of the littoral zone by several states after disintegration of the Central American Federation;
- finally, the aforementioned Caspian Sea.

Taking into account the defense significance of this question, the most preferable for our states specifically appears to be the second option, according to which the Sea of Azov will not be free to foreign naval navigation. The fact also should be taken into account here that in recent years the number of entries into the Black Sea by warships of noncoastal states has increased significantly, and there also has been an increase in the number of naval exercises held in its waters with the involvement of naval forces of NATO countries, including the United States. One need not think that the uncertain situation over the Sea of Azov will not attract the attention of these countries' military analysts and that they will not attempt to master Azov.

In connection with this, information which has appeared in the press about plans for building a bridge across Kerch Strait draws attention. According to an item in *IZVESTIYA* of 26 November 1993, representatives of the Government of Russia and Krasnodar Kray Administration as well as of the French company Bung [as transliterated] and French Kleinwort Benson Bank, with the consent of the Ukrainian party, signed a protocol on intentions to build such a bridge. It will connect Taman Peninsula of the Caucasus and Kerch Peninsula of Crimea with rail and vehicular routes. It must be said that structures similar to this exist in world bridgebuilding practice. For example, a bridge was built across the Bosphorus at Istanbul over 60 m high, a bridge with a span 1,228 m wide and 68 m high was constructed across Golden Gate Strait in San Francisco, and a twin highway bridge with span width of 304 m and height of 45 m connects the banks of Carquinez Strait (U.S. West Coast).

Taking into account the situation forming over the Sea of Azov and our country's interests in developing economic cooperation in this region, creation of such a bridge would be very advisable and would meet the definition of the legal status of the Sea of Azov and Kerch Strait as internal waters of Russia and Ukraine.

From all appearances, a resolution of the problem of the Sea of Azov already has matured, but a waiting position in this matter may lead in time to consequences similar to the situation in the Caspian, i.e., to the beginning of its development not in Russia's interests.

Development of Project 671 (Victor) Class Submarines

95UM0353G Moscow *MORSKOY SBORNIK*
in Russian No 2, Feb 1995 pp 72-76

[Article by L. Samarkin, deputy chief designer of Malakhit SPMBM (not further expanded), under rubric "Ships of Postwar Design Projects": "Design Project 671 Multipurpose SSN's"]

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[FBIS Translated Text] On 5 November 1967 a government commission headed by Hero of the Soviet Union Vice Admiral G. I. Shchedrin signed the report accepting the lead Design Project 671 multipurpose nuclear powered submarine into the Navy. The new SSN was being created above all for combating enemy missile submarines and also was intended for operating against enemy submarine and surface forces on sea and ocean lines of communication, protecting our ships and transports against submarine attacks on sea transits, participating in minelaying and performing certain other special missions.

The preliminary specifications for designing this SSN were approved in November 1959 and the preliminary and engineering designs were done in March and December 1960 respectively. It should be noted that exploratory studies on the new submarine's appearance were carried on back during 1956-1959, i.e., in the period of construction, trials and turnover to the Navy of the first domestic Design Project 627 SSN. And although both these designs were being developed in SKB [Special Design Bureau] No 143 (now the Malakhit SPMBM), a cursory glance even at the external appearance of both ships is enough to notice their "dissimilarity."

While creation of the first SSN solved the main problem of paving the way for atomic energy into the domestic submarine fleet in compressed time periods and was done within the scope of traditions, views and requirements which existed for diesel-electric submarines, features of the new submarine were determined by capabilities which use of nuclear power engineering gave the ship. V. N. Peregodov, who headed the SKB, and the bureau collective understood well that with this there appeared the possibility of turning submarines into genuinely underwater ships, for which the presence in a surface condition at sea was completely uncharacteristic.

Leading designer A. B. Petrov became the initiator, the "generator" of ideas and the main performer of such studies. Peregodov ordered that he be allocated special time for these purposes. But with the appointment of G. Ya. Svetayev to the position of chief of the SKB planning department, the search for the appearance of an SSN of the immediate future received more substantial support, and a wide range of specialists began to be involved in it. It must be noted that in the past Svetayev was one of the leading workers of TsKB-18 (now Rubin TsKB MT [Central Design Bureau of Naval Equipment]); after returning from imprisonment, which he served in a special design bureau, he worked in TsKB-112 in the city of Gorkiy (now Lazurit TsKB) and was the author of a letter to the State Committee on Shipbuilding about the need for a transition to building single-hull submarines. Insofar as I recall, SKB-143 gave a positive finding on this score.

In May 1958 new Bureau Chief V. I. Dubovichenko ordered that one of the numerous studies be formalized as an unsolicited technical proposal and be officially submitted to the State Committee on Shipbuilding. The

proposed submarine design project looked unusual: one reactor and one turbine operating one shaft, pressure hull in the form of a cylinder of one diameter with outer hull only at the forward and aft ends and a boxlike superstructure. All main ballast tanks were accommodated at the ends and between double strength bulkheads, which divided the submarine into several compartments. From cofferdams in the upper part of these double bulkheads an exit led to surfacing containers accommodated horizontally in the superstructure. There were several torpedo tubes in the forward end...

But no response to the submitted proposal came from the State Committee; on the other hand, a competition soon was announced among three bureaus (SKB-143, TsKB-18 and TsKB-112) to create four design projects of new ("second") generation advanced SSN's. These were Design Project 667 for a ship with ballistic missiles, Design Project 669—a large SSN with powerful torpedo ordnance, Design Project 670—a small SSN with torpedo armament for mass construction, and Design Project 671—an ASW SSN. The latter was supposed to have a normal displacement of not over 2,000 m³ (for the possibility of construction at yards inside the country), powerful sonar (its dimensions were stipulated in the competition conditions especially for this design project), four torpedo tubes with eight torpedoes, a speed around 30 kts and submergence depth of at least 300 m.

By the time the competition was held, SKB-143 had a wide range both of exploratory studies as well as of advance work on previously issued preliminary specifications for SSN's of design projects 639, 645 and 627P. Thus, in Design Project 639 (with ballistic missiles of M. K. Yangel's system) the question of converting the SSN's power system to three-phase ac was thoroughly worked out. (It should be recalled that in so-called first generation SSN's the power system was built on direct current, as on diesel submarines, where the main energy source was storage batteries.) In addition, in this design project a transition to considerably larger pressure hull diameters was substantiated and work began on mastering AK-29 high-strength steel, high pressure air parameters were increased and so on. In another completed Design Project No 645 and in the SSN with a liquid-metal coolant reactor which began to be constructed based on it, self-contained turbogenerators were used, in contrast to first generation submarines, where they were set in motion from a main geared-turbine unit. Thus, a certain position already existed in the SKB, with which it performed in the competition on all given design projects. It was proposed that second-generation SSN's should be single-shaft, their surface watertight integrity should not be standardized, the power system should be based on three-phase ac, the number of reactors should be determined only by required output, and the ship's lines and architecture should be formed based on conditions of underwater navigation.

This bureau's position on the whole received support from the heads of the State Committee, which subsequently helped develop preliminary specifications for

the Design Project 671 SSN. At the conclusion of competition, further development and construction of new submarines were assigned as follows: Design Project 667 to TsKB-18 and the Severodvinsk Yard respectively, Design Project 670 to TsKB-112 and the Krasnoye Sormovo Yard respectively, and Design Project 671 to SKB-143 and the Admiralty Yard respectively. Design Project 670 was reoriented for different weaponry—underwater-launched cruise missiles. But let us return to Design Project 671.

G. N. Chernyshev was appointed chief designer of this design project. General Designer Georgiy Nikolayevich Chernyshev now has celebrated his 75th birthday and the number of submarines built under his design projects has gone into the seventies. At that time he was not even 40, but he already had behind him experience of work on the Design Project 617 submarine with hydrogen peroxide turbine and the Design Project 639 submarine, and active participation in creating the first nuclear powered submarine and in other exploratory developments.

As already noted, the design project of the ship, original and without a prototype, was developed in compressed time periods, and this despite the enormous load on the bureau with work on other design projects. In addition, there was strong opposition in the Navy's leadership and scientific-technical circles to constructing single-shaft and single-hull submarines (without ensuring prescribed standards for surface watertight integrity). Moreover, in the period of coordination of preliminary specifications for Design Project 671, the CINC Navy had approved rules for designing nuclear powered submarines which prescribed that they should be twin-shaft, twin-reactor, and of course satisfy specific conditions of surface watertight integrity. There also existed a difference in views on the amount of full submerged speed and on the makeup and amount of armament.

Simultaneously with this, it became increasingly clear that the Design Project 671 SSN, remaining the only submarine with torpedo armament in the construction plan, was acquiring a more and more versatile, multipurpose character and so its displacement could reach the critical mark which still permitted transportation along the White Sea-Baltic Canal. In addition, this substantially influenced her speed and maneuvering qualities. As a result, in the stage of development of preliminary specifications and the preliminary design, it was necessary to perform a large amount of studies whose successful and rapid fulfillment was helped to a considerable extent by original methodologies for functional analysis of weights and volumes developed in the SKB's advanced design sector headed by A. B. Petrov.

Just what was accomplished in the design project as a result?

The main power plant was adopted as single-shaft, since it managed to be proven that it alone was capable of providing least noise, least displacement and greatest speed compared with a twin-shaft plant of similar power.

CINC Navy S. G. Gorshkov gave his consent to use one propeller shaft in this design project "as an exception" because of the firm position of the chief designer and bureau heads, the support of the State Committee on Shipbuilding and a bold report by Navy Chief Observer V. I. Novikov. That is how a breach was made in this question.

The shape adopted for the Design Project 671 SSN hull was in the form of a body of rotation with principal dimensions having optimum ratios from the standpoint of propulsive coefficient in a submerged condition. And it must be emphasized that they were specifically "adopted" for further designing and not "received" as a result of putting the ship together from the traditional "compartment-blocks" or using some kind of existing prototype. The customary first and second compartments with their torpedo ordnance, living spaces, battery well, auxiliary systems and gear, and also sonar equipment, which occupied an enormous volume, were combined in an outer pressure hull of increased diameter. The twin-reactor nuclear plant with transverse placement of hardware and with large specific power per unit weight and occupied volume also was "inserted" in that diameter of the pressure hull. A configuration of the turbine compartment was used here for the first time which later became classic. All this is an example of how a chain of purposeful decisions increases their cumulative effect.

The single-shaft main power plant generally increases a submarine's propulsive qualities by approximately 30 percent compared with a twin-shaft main power plant and permits accommodating the main geared-turbine unit and both self-contained turbogenerators with supporting systems and equipment in one compartment. This reduces the submarine's relative length, which means her displacement and "wetted surface," which additionally increases the ship's propulsive qualities. As a result, although the Design Project 671 SSN had a displacement approximately 30 percent larger than the Design Project 627, their full wetted surfaces ended up practically identical. It is also indicative that the so-called admiralty coefficient, which characterizes the efficiency of using the ship's power, was approximately double that of the Design Project 627 SSN and was close to the coefficient of U.S. single-shaft nuclear powered submarines.

Attaining uniformity of shape and content also was facilitated by another important circumstance—the attempt to accommodate the most modern sonar system of that time on the ship. In terms of its dimensions, this sonar system's bow transducer array in combination with the rather massive torpedo ordnance could be accommodated only with rather large forward end dimensions. Running ahead, I will say that using the most effective sonar equipment and ensuring optimum conditions for its operation were a priority for all of Chernyshev's design projects.

But much of what was said above entered into contradiction with the demand of the client, the Navy, to

ensure conditions of surface watertight integrity. The bureau favored rejecting these conditions, and not just in a desire to reduce the ship's displacement, but also because they constrained a search for simple design solutions, not allowing a more optimum configuration of equipment because of the limitation of the length of compartments and their increased number. In addition, total compliance with conditions established by the Navy in this question led to increased design complexity of the ship's hull and her systems, an increased high pressure air reserve, an increased number of connections, and so on, and also hampered achieving minimal underwater noisiness. But the client stood his ground...

Therefore the preliminary design was made in two versions: with and without fulfillment of conditions of surface watertight integrity. An analysis showed that such requirements are especially critical specifically for single-shaft submarines. The acute, tapered after lines of such submarines with small reserve buoyancy lead to a "steep" longitudinal stability curve at stern trim angles. This circumstance was exacerbated (especially in seaways) by the flood-hole design of main ballast tanks widely used at that time. Having borrowed this simple German design (although their specialists used it in the absence of rigid conditions for ensuring the surface watertight integrity of their submarines), we combined it with the uncombinable—our requirements on these questions. Therefore we had to increase reserve buoyancy (and naturally, full submerged displacement), and for single-shaft submarines above all in the after end, which led to its "inflation," with all consequences stemming therefrom. But on the other hand, the lines of a submarine with double-hull architecture permitted optimum accommodation of the standard-size forward set of sonar system and torpedo ordnance and obtaining good hydrodynamic hull lines.

In search of a compromise, SKB-143 decided to return to prewar flood-valve tanks. Thanks to this, the client's requirements were satisfied with considerably lesser volumes of main ballast tanks and less high pressure air reserve, and an opportunity also appeared to obtain hydrodynamic hull characteristics rather close to optimum. But most important, having rejected the flood-hole tanks, the designers gained confidence in calculating elements of trim of a ship in distress under conditions of heavy seas. Since then, all submarines built under Chernyshev's design projects invariably had flood-valve main ballast tanks. The tragic loss of the Design Project 627A SSN K-8 in the Bay of Biscay in 1970 showed that even a twin-shaft submarine with developed after end and large relative length (the longitudinal metacentric radius is almost three times that of the Design Project 671 SSN), but with flood-hole main ballast tanks was unable to remain afloat with seals of numerous pressure hull openings burned out, which caused its loss of pressurization.

The next serious question was the main power plant output. It must be said that a new water-cooled, water-moderated reactor was developed for all second-generation SSN's with output close to the cumulative output of reactors installed on Design Project 627 SSN's. And although it was possible to reach a relatively high full submerged speed with one such reactor, this left no prospects for substantial modernization of the design project in the future and did not satisfy designers' desires to surpass speed and maneuvering characteristics of similar SSN's of the probable enemy. Therefore they decided to install two reactors in these submarines. As a result, as already mentioned, a very compact steam generating plant was created with transverse arrangement of reactors and with high specific indicators. A unique iron-and-water shielding tank was created for it, which was both the foundation and at the same time a unique installation template for the plant.

A few words also must be said about another very "critical" ship design, her after end, where a tight knot was woven from the main shaft line with heavy propeller and the two shafts of auxiliary propulsors of unique design, with the numerous actuators of various rudders intersecting their axes. All this, moreover, was "criss-crossed" by structures of vertical and horizontal stabilizers, it was "hung" on the after part of the pressure hull and experienced all possible kinds of static and dynamic loads, and it was also necessary to take into account design loads from external explosions. Without going into detail, it can be summarized briefly that this task was accomplished successfully, originally and, most important, simply in design.

Rough drafts contained back in competition design projects were made the basis of a very successful and very compact placement of torpedo ordnance in combination with the forward sonar system set, which occupied a large part of the forward end. These rough drafts now received final formalization and later became the basic solution for other design projects. A problem of great importance was solved in the torpedo system—its employment depth was increased considerably. The upper third of the first compartment was set aside for this system. The torpedo tubes formed two horizontal rows. A horizontal torpedo loading hatch was located beneath the underhead in the longitudinal central plane a bit above their first row, and a horizontal tray covered by panels, into which a crane would lower a torpedo, was located in front of the hatch in the forward end. The entire loading process not only was reduced by many times, but also did not require physical efforts of the crew and performance of dangerous operations. Everything was done remotely. The heavy torpedoes would be dragged into the compartment, transported along it, lowered onto racks and loaded into tubes with the help of hydraulic drives...

It also must be noted that the length of remote and automatic control hydraulic lines in first compartment alone was equal to that on the entire Design Project 627

SSN. Here it is apropos to say a few words about automation in general and automation of the Design Project 671 SSN in particular. Now we have begun to get excessively carried away with automating all and everything—we build very complicated schemes with duplication of the duplicating elements of systems, and again with their cross duplication. And on all this we superimpose a web of automated and remote control, forgetting that the number of unpleasantnesses in a system is proportional to the square of connections in it. It would appear that a kind of "golden mean" was achieved in this respect in the Design Project 671 SSN. Relative design simplicity was combined in it with remote and automated control of various mechanisms and devices, with preservation of essentially all elements of their manual local control.

A study of questions of preparing production jointly with the Admiralty Yard began back in the preliminary designing stage. Yard grounds were expanded, a new shop was being built, the arrangement for launching ships was being renovated, and numerous technological benches (for the new high pressure air system, for steam generating plant assembly, for the rapid loader and so on) were being prepared for equipment. The difficulties lay not only in the large amount of work, but also in the absence at the Yard of workers with necessary skills, since the Admiralty Yard had not built submarines for a long time and only a small group of submarine builder-specialists headed by K. F. Terletskiy had been left intact there. He now is a widely known shipbuilding engineer, who at one time was an underwater navigation officer back in the Imperial Russian Navy.

And one other reason hindered this work—a certain opposition to plans for building new SSN's at the Yard on the part of heads of the Leningrad Sovnarkhoz, headed at that time by S. A. Afanasyev, who even asked the USSR Government to countermand that decision. At that time SKB-143 prepared a brief, vigorous communication to CPSU Central Committee Secretary D. F. Ustinov, which had its positive effect. And a threat hovered over the Design Project 671 SSN once again when at a major review of advanced models of naval equipment at the Central Scientific Research Institute imeni A. N. Krylov, N. S. Khrushchev expressed doubt as to the need for creating such submarines. But on hearing Chernyshev's briefing about combat capabilities of the SSN's of this design project and prospects for their employment beneath the vast Arctic ice cap, which covered the probable enemy's missile carriers, he agreed with the advisability of their construction.

After this the preparation of production for starting up the design project in series went at full speed. A Directors Council headed by the director of the building yard (B. Ye. Klopotov, later N. I. Pirogov, and still later V. N. Dubrovskiy) and which included directors of leading institutes of the shipbuilding sector—and B. K. Razletov

(later N. N. Isanin) and Chernyshev from SKB-143—also began to function. I recall that in case differences of opinion arose, the chairman invariably turned to Chernyshev, and the Chief Designer's word was considered final.

In the period of construction at the Yard, the first crew of the lead ship also appeared, headed by Captain 1st Rank Ye. D. Chernov. Finally the ship was removed from the shop on a white summer night in July 1966, and a year later, also in July, her mooring trials at the Yard's quay ended. After this the submarine was placed in a transporting dock and taken past Leningrad bridges, raised as if in greeting, to the site of sea trials in the White Sea.

That is where the day of the ship's meeting with her native element came. The dock "hung" at limiting draft with bow eastward. It was calm. Everything had become quiet, only the dawn's mother-of-pearl reflections played over the water, and it seemed the hull of the submarine which had come to the surface shuddered from impatience. At a command from the bridge the screws of propulsion motors sounded and, gradually picking up speed, she slipped sternfirst past the end of the dock sidewalls onto the expanse of ancient Pomor waters, which received the first-born of a new generation of the state's nuclear powered submarines.

The ship was prepared for sea trials at Severodvinsk. Then the submarine was at the site of her first submergence. She was trimmed, answered the helm readily, and quickly disappeared to the given depth. There was quiet and calm in the ship's control room. Chernyshev, I. S. Belousov (Admiralty Yard chief engineer), G. L. Nebesov (director of the Yard's military acceptance) and I. M. Kolchin (commander of the formation of submarines being built) conversed quietly. The test party awaited the beginning of measurements. The ship commander slowly increased propeller rpm. Already 10 kts, 12, 14... Kolchin was first to catch himself: "What speed?" And only then did everyone somehow immediately realize we were under way! We already were under way under our own power at depth!

And we rushed to congratulate each other.

At the completion of the technical trials came the presentation to the government commission and conduct of state delivery trials. In them the submarine set three records at once: full submerged speed, submergence depths and weapon employment depth. Her superb maneuvering qualities were noted, and safe trims exceeded by several times those permissible for the first nuclear powered submarines.

In conclusion came delivery to the Fleet, and following that a large series of ships of the same class and their new modifications...

Sociological Study of Naval Contract Recruitment

95UM0353D Moscow MORSKOY SBORNIK
in Russian No 2, Feb 1995 pp 58-61

[Article by Captain 1st Rank V. Masyagin under rubric "We Study Public Opinion": "No Cause for Complacency"]

[FBIS Translated Text] *The subject of contract manning of the Navy is touched on rather often now, but no appreciable changes for the better have been achieved for now, at the very least based on information from the editorial mail. Evidently the cause lies in the fact that not everything was fully thought out before implementing such a form of personnel recruitment, and its very accomplishment bore a certain imprint of working in fits and starts, right up to a strictly appointed date when commanders were obligated to report fulfillment of the "contract personnel plan," and often even the possibilities of its fulfillment were not taken into account. All this inevitably ended with corrections made by real life, and at different bases and garrisons with their own specific features, although of course there also are many common traits inherent to all units and ships.*

Today we offer for your attention the results of a sociological study conducted among contract navymen in a Baltic Fleet surface ship formation. Its conclusions and recommendations probably will not seem indisputable to all readers, but they may be useful for many commanders and supervisors.

The goal of the military-sociological study was as follows:

- determine today's social portrait of the contract serviceman;
- determine the motivation for concluding and extending contracts (contributing terms and factors and reasons obstructing it);
- determine the degree of contract servicemen's satisfaction with the step taken both from an official as well as a personal aspect.

But the main task posed was to develop recommendations and suggestions on further raising the level of this work and upgrading the organization of service of this category of servicemen. Certain conclusions could be drawn from comparing similar studies conducted in 1993 and 1994, which, frankly speaking, are inauspicious on a large number of points. The euphoria after results of the first mass recruitment for contract service passed quickly and was replaced by mundaneness, with many urgent problems demanding immediate solution at all levels (for our study, from the formation commander to the immediate supervisor working with servicemen).

There now are 400 contract personnel in our formation. Eighty seven were surveyed in the course of the study, which is a sufficiently representative sample considering its homogeneity (conditions of service and life are approximately identical for all contract personnel).

The social portrait of the contract serviceman in the formation did not change substantially over the past year. We will cite results of the last study compared with 1993 data:

- born of working families—69 as against 78 percent;
- born of peasants—13 percent in both cases;
- born of employees—9 as opposed to 7 percent;
- 67 (69) percent were brought up in complete families and 59 (28) percent in large families;
- 23 (25) percent were brought up without a father, 5 percent grew up without a mother's attention, and 1 percent are without father or mother;
- by nationality 71 (78) percent are Russians, and of the other six (in 1993 seven) nationalities there are Belarusians, Tatars, Bashkirs, Ukrainians and Moldovians, and a German appeared in place of a Lezghin and Moldovan.

While 63 percent of those who concluded a contract in 1993 completed vocational-technical school or SPTU [rural vocational-technical school], 28 percent completed secondary school, 8 percent had an incomplete secondary education, and before this essentially all had been on first-term service, to which they were called up after working in a civilian specialty (81 percent) or studying (18 percent), in 1994 56 percent already had a secondary-technical or secondary-specialized education, 5 percent had completed one or more years of higher educational institutions, 31 percent had a complete secondary education, 10 percent an incomplete secondary education, 52 percent worked in a specialty before service and 50 percent studied. Thus, it can be concluded that the educational level of contract personnel rose somewhat, which is why conditions improved for their more qualitative professional mastery of military specialties.

To illustrate the distribution of this category of servicemen by terms of service, we will cite data tabulated in Table 1.

Table 1 - Analysis of Distribution of Contract Servicemen by Periods of Service

Term of Service, yrs	Number of Servicemen, %	
	1993	1994
0.5	43	-
1	31	28
1.5	16	15
2	-	21
2.5	-	33
3	-	24
3.5	-	1
4	-	6

As we see, contract personnel were recruited basically from among conscript servicemen. The majority—93 percent (1993) and 95 percent (1994)—concluded a contract for 3 years, but only 6 percent extended the

contract for another 3 years and only 2 percent for 5 years, and these primarily are extended-term servicemen and women of the formation's coastal base. While in 1993 two-thirds of those who concluded a contract expressed the desire to serve aboard ships and one-third at a coastal base, and 56 percent occupied positions of section leaders and senior specialists, in 1994 already 80 percent of contract personnel were determining the combat readiness of ships and support units, although the positions of section leaders and senior specialists were 50 percent filled by them.

The better manning of the coastal base by contract personnel, which reached 71 percent, draws attention. What do these figures indicate? Probably that despite less pay, contract personnel are drawn here by better conditions of service, life and everyday routine and perhaps by great stability, good relations in the collective and the commanders' attention to their needs and requests, but most likely, in our view, by the precise regulation of their official work. The fact is that a full strength level provides an opportunity to correctly distribute work time and relieves of additional loads, which is still absent on the majority of ships.

An analysis of contract manning of various military specialties did not show substantial changes in 1994, but the degree of satisfaction over the organization of combat training dropped. While in 1993 73 percent of contract servicemen were satisfied with it, in 1994 it was only 32 percent, and 16 percent consider it necessary to increase the number and duration of specialty classes. Evidently serious attention must be given to this both by the formation's combat training department and by higher echelons, especially as questions of organization and regulation of special training were updated in the fall of 1993.

Just what attracts people to contract service?

In 1993 patriotic motives such as "the need for protecting the Motherland" drew 17 percent to contract

service. On the whole, however, a romantic direction of motivation was more characteristic of those who chose shipboard duty. The combination of pragmatic (70 percent) and romantic (30 percent) directions confirmed that the chosen path of mixed manning is promising. And while one hardly has to doubt that in the final account the Navy will be professional, it is already possible to speak about a change of motivation: only 9 percent of contract servicemen explained the desire to serve in 1994 by patriotism. Ninety percent of them are drawn to service by the possibility of being paid well and becoming independent. Fifty-two percent desire to be independent, 46 percent would like to see new places, 6 percent would like to receive a good trade and 18 percent wish to avoid unemployment.

Just what troubles the contract seaman most and what difficulties does he experience?

In 1993 38 percent of those surveyed proclaimed the unsettled state of everyday routine, 57 percent a restriction of personal freedom, 28 percent that they experienced a feeling of separation from relatives and 19 percent the commanders' insufficient attention. In 1994 all these indicators changed somewhat and reached 32, 61, 15 and 37 percent respectively, but new points also appeared, among them fears for life and health, which trouble 6 percent, and the fear of humiliations and ridicule, which troubled 3 percent. Just what conclusion can be drawn from this?

Questions of regulating official activity of contract servicemen continue to be incompletely resolved. Their status has been defined imprecisely and many rights and privileges have been infringed upon. This conclusion also is confirmed by a survey of complaints and statements of this category of petty officers and seamen conducted during a three-day methods course. Our study data as to the degree of satisfaction of contract servicemen with their positions are shown in Table 2.

Table 2 - Satisfaction of Contract Serviceman With His Official and Personal Situation

Satisfaction Indicators	Degree of Satisfaction, %					
	Completely		Not entirely		Dissatisfied	
	1993	1994	1993	1994	1993	1994
Specialty	76	32	12	16	1	2
Relations in the collective	-	30	-	24	-	6
Commanders' attitude	10	8	39	41	16	22
Meals	30	9	35	37	20	21
Pay and allowances	67	8	35	43	20	14
Colleagues' attitude	60	10	15	23	-	15
Taking advantage of opportunity for liberty to city	32	12	22	40	15	16
Opportunities for spending free time	-	3	-	38	-	25

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The conclusion is unequivocal—satisfaction is declining. Of course, the majority of reasons for that are objective, but there also are those whose solutions depends on us as well. It is especially necessary to analyze changes in relations in military collectives. In 1993 60 percent of contract personnel surveyed declared that they were completely satisfied with the attitude of colleagues, 15 percent "not entirely," and the others did not respond. The validity of responses was confirmed by asking verifying questions, and then the conclusion was drawn that the relations of contract personnel with other seamen were forming normally. Just what do we have today? Only 30 percent of contract personnel are satisfied with relations in the collective and 24 percent "not entirely," i.e., now the problem of personal relations between contract personnel and those serving under the draft again is very urgent. The following figures also indicate a change for the worse in commanders' attitude toward them: in 1994 the number of those completely satisfied with the attention of superiors became fewer—8 percent (as against 10 percent in 1993), 41 percent were not entirely satisfied with their superiors' attitude toward them and 22 percent of those surveyed were dissatisfied with this, i.e., their number increased. We assume that the collected data on the whole reflect a feature of the present situation, and not just in our formation.

Only 3.4 percent responded positively (8 percent in 1993) to the question regarding a contract extension. Just what are the reasons for the negative response? The majority undertook to conclude a contract in order to combine periods of service under the draft and under contract. Therefore a seaman often concludes a contract after serving a year under the draft in order to take advantage of the different privileges, and then by his behavior forces the commander to terminate the contract. As a rule, he does not indemnify for the damage which he did to the state in any way. For example, lack of discipline is the cause of 87.5 percent of contracts terminated in the formation, and petty officers and seamen who concluded contracts in the period of performance of duty under the draft account for essentially 90 percent of such instances.

Composite data on the status of military discipline among contract servicemen in our own and in the adjacent ship formation are of interest in this respect. Thus, in 1993 not a week went by that one of them did not commit a gross infraction, and there even was a person convicted for nonregulation relations with young seamen. Gross infractions, which include being AWOL, returning late from liberties and leaves, and violating order in public places, including instances of use of alcoholic beverages, were committed by every sixth serviceman of this category. All this indicates that contract servicemen require no less—and in some things for now even more—attention and indoctrinational influence than their colleagues serving under the draft. The fact is that people do not become professionals themselves—we must bring them up by training and educating them, and in so doing using both our own experience as well as that of other fleets.

It appears that the important thing in the job of contract manning of ships and units is to make it so that both parties, both the commander and the contract serviceman, have an incentive for quality of service of this category of navymen, in connection with which I would like to express a number of suggestions.

It is necessary to urgently update the provisions of documents regulating the organization of contract service.

To improve selection quality, demands on candidates must be increased on the part of certification boards, whose makeup definitely should include a psychologist, a physician and other flag specialists.

Go over once again the legal foundations of contract service with all categories of commanders and supervisors as well as with contract servicemen (52 percent of those surveyed say they have a poor knowledge of them).

Elevate the status of the contract serviceman, make wider use of advertising of contract military service and publish reference and methods literature on this question. Conduct the contract signing in a ceremonial atmosphere.

Make changes in the organization of special and general training of contract servicemen, incorporating it in corresponding documents.

Take steps to realize the announced benefits and privileges of contract personnel and to provide them with prescribed allowances, and strictly monitor the completeness with which they are provided.

Increase attention to indoctrinational work among servicemen of this category and be more concerned with supporting their cultural and leisure activities.

From among the most authoritative contract servicemen, set up corresponding ship councils and invest them with specific powers.

It seems to us that this is the only path along which it is possible to ensure the training of genuine professional servicemen for the Navy and to a certain extent solve the problem both of quantitative as well as qualitative manning of formation ships under present conditions.

On Question of Naval Housing

95UM0353E Moscow *MORSKOY SBORNIK*
in Russian No 2, Feb 1995 pp 62-64

[Article by Captain 2nd Rank V. Pavlyutkin under rubric "The Problem Needs Solving": "A Far From Happy Incident, or on the Question of Housing Construction in the Navy"]

[FBIS Translated Text] The article in the Kaluga newspaper VEST was on what is now an effective topic, as they say: about corruption in the military department or, more accurately, in the Obninsk Training Center and the Navy Engineering Directorate. It began this way: "Before me is a whole pile of documents. They contain the history of major intrigue, scandalous and blatant,

considered and cynical. But there is a limit to any impudence. I have studied the documents. Facts have been checked..." The article by journalist T. Banderova is rather voluminous and so we will only summarize it.

In February 1992 the Navy Training Center and the Physico-Energetics Institute concluded a contract according to which the Institute transferred the foundation of an apartment house to the Training Center and was to receive 18 apartments as settlement. In March the Obninsk mayor's office was given a share with the allocation to it of 20 percent of living area under construction. When erection of walls already was under way, the commercial firm of Energozhilstroy, a founder of which was the daughter of former Training Center Chief Engineer Captain 1st Rank (Reserve) V. Murava, was included among the shareholders (by an out-and-out forgery, in the journalist's opinion). As Banderova noted, while having a purely symbolical authorized fund, this firm had big ideas about obtaining 15 percent of housing under construction. "Without having produced anything," at the end of construction Energozhilstroy, in addition to all else, sold apartments not yet belonging to it at market price and redeemed its 15 percent, now of the production cost, by which it enriched itself fantastically. In addition, two other apartments were received by persons having nothing at all to do with the Navy. "Officers with families knocking about private apartments, say thank you' to your commander," the article's author sums up. The Physico-Energetics Institute, as follows from the article, also was left cruelly deceived, not having received a single one of the apartments due it.

It must be noted that the material was presented bitingly, but comments about it in Obninsk itself are far from unequivocal. FSK [Federal Counterintelligence Service] representative Viktor Miroshnichenko and Tax Police Department Deputy Chief Yevgeniy Chepelenko, at whose urging, as I learned, this article appeared, took the position that everything that had been written conformed to reality. But Training Center Chief Rear Admiral Vladimir Yamkov and Captain 1st Rank (Reserve) Valentin Murava firmly intended to get a refutation from the newspaper, and otherwise file an action in court. Igor Kistayev, the city's senior assistant procurator who conducted a procurator's check, also believes the article is unobjective and biased. As for me, the more I met and talked with various people, the more I too inclined to the latter evaluation.

Let us begin by saying that Energozhilstroy's participation in building the house was stipulated from the very beginning, and documents confirmed this. And the firm conducted real financing of the work for practically the entire time of the house's construction. True, through a misunderstanding it was not named among the shareholders in one copy of the contract of 12 March 1992, which served as Banderova's formal grounds for subsequently accusing the navymen of forgery.

Meanwhile, the house had a hard time being built: the Fleet lacked money and now and then the construction

was on the verge of being halted. And here is where Energozhilstroy helped out. As Rear Admiral Yamkov related, there were times when money would be brought from the firm under guard of seamen so as to settle with workers right there on the spot. But financial capacities of the recently established Energozhilstroy were very limited. Banks demanded high interest for credit, and then the idea arose of selling a portion of the apartments earmarked for it at market price, directing the money made from this for continuing construction. Purchasers were found right away and, as individual contracts attest, 19 apartments were sold in that manner, and quite officially, with payment of prescribed taxes. The money made in this way basically permitted bringing the house "up to snuff." In February of last year it was accepted by a state commission and new tenants received orders.

This 216-apartment house was needed by the Training Center like air. In addition to more than 150 of its own homeless, many officers arrived here after the Navy Training Center in the Estonian city of Paldiski was disbanded. Placing the new house in operation was supposed to appreciably relieve the situation at hand. And here is how apartments were finally distributed in it: the Training Center received 134, the mayor's office paid for 36, Energozhilstroy got 12, but we will also list for it the 19 sold previously at market price to complete construction, and 15 went to builders and city municipal services. Now about the two apartments which allegedly went, as appears in the article, to "outsiders." One was categorized as an official apartment of the Training Center, and Colonel S. Zolotukhin, chief of SMU-2, which built the house, moved into it. And there is an official guarantee of the Navy Engineering Directorate about the Directorate compensating the Training Center with equivalent living space. And when we speak of the so-called second apartment which "slipped away" from the navymen, the article's author has in mind the one received by Lieutenant Colonel V. Groshev, chief engineer of that same SMU [Construction-Installation Directorate], but it is included on the account of the builders' share.

As I understood it, the situation with the Physico-Energetics Institute also was not quite correctly outlined in the article. Documents confirmed that the foundation of the apartment house was transferred to the Training Center gratis. This was a result of the fact that the Center previously transferred money for more than 20 apartments to the Institute, which was building its own housing, but at that time housing was not allocated to the navymen, just as they also were unable to return the money. In the common opinion of several audit commissions, only the court can determine the equivalency of such an exchange and also resolve the continuing dispute between the two organizations.

It would appear that one also cannot help but quote the response received from the General Procuracy signed by State Adviser of Justice 2nd Class A. Mytsykov and addressed to Rear Admiral Yamkov. It was reported in it

in particular that "information of the Russian Federation FSK about violations of financial and economic activity in the military unit entrusted to you was checked by the procurator on our behalf and was not confirmed. I assume there are no grounds for further intervention of procuracy agencies. You have the right to go to court to defend your honor and dignity."

And so seemingly everything is clear about the Navy Training Center and Engineering Directorate, but a contradiction between Energozhilstroy and the tax inspection remains. The firm has a state license to perform construction activity, with a list of engineering services. If one proceeds from it and corresponding tax instructions, in the first two years of its work Energozhilstroy has the right to an exemption from taxes on profit and added value. But Chepelenko, the tax inspection worker already mentioned, believes the license is insufficient grounds for benefits of this kind, since the legislation does not envisage the conclusion of direct contracts for participation construction, and so major penalties were imposed on the firm. Such is the quality of our present regulatory documents, and that is why the response to the question of who is right and who is guilty in this situation can be given only by the arbitration court, which, by the way, should be held soon.

In general I personally am mistrustful of commercial structures, having been witness to how an enormous number of our businessmen are "cheating" the people. But something else must be seen: the Navy hardly can get by without commercial structures in solving problems of housing construction with the acute shortage of funds being allocated under the present economic conditions. In that same Obninsk the Training Center has the foundation of one other 242-apartment house, but its construction essentially did not begin because of the absence of financing. That is why it is necessary to have qualified legal support of the joint activity of Navy organizations and commercial structures. And so that there are no situations similar to that described above and promoting the birth of one-sided articles, the state should establish an appropriate regulatory base, which for now, unfortunately, is very imperfect. And these, too, are the realities of our life...

Our Epilogue

Possibly it would not be worthwhile to cover this story in such detail were it not for one essential point: it appears to us that it goes far beyond the bounds of a local, small-town event, if only because it reflected as in a drop of water many of the absurdities of our present life—legal, social and economic. The idea is that not one commander should have a headache about the question of housing for his subordinates—that is what the state is for. Unfortunately, more and more often the state acknowledges its own impotence, shifting concern for servicemen in particular to their very own shoulders.

Here is what we were told by Rear Admiral O. Lazarev, deputy chief of the Navy Combat Training Directorate,

who is very knowledgeable on circumstances of construction of the house in Obninsk, since he headed the commission which examined the question of the legality of actions of Training Center Chief Rear Admiral Yamkov.

"When I familiarized myself with the article in the Kaluga newspaper VEST and especially after a chat with FSK representative Miroshnichenko, I too formed the impression that some kind of illegal operations were occurring around the house being built. But in the course of the work—and the commission took almost a month to look into the situation at hand—we became convinced that the article represented the opinion only of one side. And how could it be otherwise when, in preparing it, the article's author, Banderova, did not deem it necessary to chat either with Yamkov or with Murava. And it was after the article saw the light that they attempted to explain to the journalist with documents in hand what was what, but her independent position remained unchanged...

"Although the FSK and tax inspection representatives mentioned here hold a similar position, there are no grounds to disbelieve the findings of specialists of other competent agencies—the Engineering Directorate as well as the Finance Directorate of the Navy, the tax inspection and, finally, procuracy workers. As a result, all doubts concerning the legitimacy of actions of the Center's chief have been dispelled for me."

With respect to constructing the next residence for the Training Center, Oleg Nikolayevich agrees with the author of our journal: it is not being done and the reason for this is the Navy's lack of funds needed for this.

Is this so in fact? We took this question to another competent person, Lieutenant Colonel A. Tkachev, senior officer of the department of the Navy Engineering Directorate, which manages construction.

"To say that means not to say anything," answered Aleksandr Ivanovich. "And this concerns not just the Obninsk Training Center. Last year, with a capital construction financing plan of R482.1 billion, the Navy in fact received R210.6 billion from the budget, which is 43.7 percent. When we take into account that R44.4 billion of the funds received went to pay 1993 debt, we actually received only 34.5 percent of the funds of the initial amount. As a result, we were able to build only 2,903 apartments from the federal budget instead of the planned 4,049. Meanwhile, the number of homeless in the Navy, with consideration of the completion of redeployment of naval forces, is 17,095 as of 1 January of this year.

"Construction of housing in garrisons located in remote areas now practically has stopped. It is planned to resolve the problem of providing servicemen there with housing by settling out those who are being discharged or already have been discharged to the reserve. There were 684 apartments allocated for them in 1993-1994 in various cities in the central belt of Russia. Some help is provided by the use of extrabudgetary funds, thanks to

which 235 apartments were built last year, and by the share in construction together with various commercial structures, which also gave us almost 300 apartments in the past year. This work must be continued, but we still plan to put 80 percent of capital investments to use through efforts of military-construction organizations. But whether or not these investments will be there and when they will come is a difficult question, although it is already known that in the present year their limit will be almost 40 percent less than in the past year. Add to this that over a third of them will go to pay the Navy's debt to construction organizations for the past year (which, by the way, formed though no fault of its own) and one need not speak about serious housing construction this year."

The picture turns out to be pessimistic, but in the course of conversations in the Navy Engineering Directorate we were troubled by one other question. As we understood it, for several years now because of a lack of budgetary funds, the Navy has been forced to finance only housing construction, capital repair of its housing and its preparation for winter, but practically no funds remain for solving problems connected with the system of basing its forces. And this is what directly affects questions of its combat readiness...

REAR SERVICES, SUPPORT ISSUES

Problems of Reforming Naval Ship Repair

95UM0353F Moscow MORSKOY SBORNIK
in Russian No 2, Feb 1995 pp 65-67

[Article by Rear Admiral Yu. Khaliullin, chief of Higher Naval Engineering School, and Captain 1st Rank (Reserve) A. Golosov, doctor of technical sciences, under rubric "Armament and Equipment"]

[FBIS Translated Text] The level of technical combat readiness of Navy ships and formations always has been determined by the effectiveness with which the maintenance and ship repair system functions. Life shows that such a system, under conditions of market relations taking shape in the domestic economy, needs substantial reform and structural reorganization. As of today it is possible to ascertain such negative aspects of the state of our Navy's ship repair as the following:

- technological backwardness of its production, which hampers adaptation to changing conditions of production-economic activity with a significant reduction in budgetary appropriations;
- lack of readiness of ship repair enterprises for significant price skews in the resources and services market;
- eroded nature of ship repair system development goals both from a short-term as well as a long-term aspect, as well as termination of the financing of construction and reconstruction of ship repair production;
- a deepening dissociation of Navy ship repair yards, a reduction in the level of interyard cooperation, and breaks in economic ties with enterprises of the "near abroad."

That situation increases the economic losses of ship repair yards, exacerbated by the absence of regional structures assisting in the development both of state enterprises as well as medium and small business enterprises. All this undoubtedly is connected with the unfavorable financial environment which accompanies ongoing reforms and makes any production unprofitable, because of which potential investors' financial resources are being diverted to the sphere of intermediary operations.

The unsatisfactory renovation policy of recent years and systematic underinvestment in ship repair production already has led it to qualitative degradation. At the present time the periods of service of basic production assets of Navy ship repair yards basically exceed similar average data for other sectors of industry. Only 15 percent of machines and equipment meet modern requirements and the level of manual labor is 40-50 percent. An analysis of the work of ship repair industries best equipped with foremost technology showed that very low loading coefficients of high-capacity equipment are being seen at practically all ship repair yards. With a shift index of 1.0, this index is 0.2-0.7 for mechanized assembly and welding lines and 0.1-0.3 for numerical control machine tools. In addition, ship repair yards still are characterized by considerable volumes of intershop and intrashop transloading, loading operations, worker shuffling, and on the whole slow assimilation of industrial repair methods.

A weakening of the system of centralized regulation of investment flows in the sphere of preparation of ship repair production led to a significant exacerbation of the problem of balancing the physical needs for repairing new ships and the technological capacities of Navy ship repair yards. At the same time, in accordance with new Russian Federation military doctrine, development of the Navy ship order of battle in the near future will follow the path of qualitative upgrading, with an overall sharp reduction in construction rates of modern ships, above all large surface ships and submarines, and with further decommissioning of obsolete ships which have not been supported by repairs (or for other reasons).

The creation of new general-purpose combatant ships with modern armament, large striking power and increased defensive capability is recognized as the priority direction for today in developing a surface fleet. The process of introducing ship electronics obviously will grow even further. This in turn requires advance creation of the newest repair technologies, a study of questions of maintainability and designed-in efficiency of repairs of ship technical equipment, training of corresponding specialists, and a change in the structure of engineering-technical personnel.

The unstable or, more precisely, unpredictable and insufficient financial support of the Navy and a decrease in resource support to its ship repair needs already have led to one other unpleasantness—reduced utilization of Navy production capacities by Fleet orders, which entailed a certain curtailment of ship repair production

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and attempts to increase the output of other kinds of products. A loss of highly skilled repair specialists is occurring, and it has become more and more burdensome to retain the budgetary upkeep of many fleet repair subunits under conditions of reduced financing and formation of a market infrastructure. The decline of ship repair production led in turn to exacerbation of the conflict between expenditures for social purposes and for innovations: enterprises are forced to increase wages and resolve other social problems at the expense of reduced financing of scientific-technical progress. Therefore the resolution of contradictions between the needs of technological development of production and the need to carry out organizational, economic, social and other measures under the new conditions is an important problem connected with developing a market-oriented production-technical policy of naval ship repair. The orientation on old organizational structures is more than problematical.

A new combination of factors has formed at the present time which determines the development of the ship repair system, and there has been a considerable change in the economic environment in which Navy ship repair yards operate. The Navy's production-economic structures cannot develop successfully today without considering and using the general regularities of a market economy, or in isolation from economic reform being carried out in the Russian Federation. The causes of crisis phenomena which have enveloped the sphere of the Russian Federation's material production are analyzed in sufficient detail in the periodical press and above all in special publications. There is also no shortage of numerous recommendations along all its directions. But if we are speaking of the ship repair system, then development of a market infrastructure in the country undoubtedly also has enormous influence on changing the nature of its economic and social ties, and this in turn leads to a need to reform its management system and also the forms of division and cooperation of labor in it. The traditional impression of the determining role of technology in development of a production system is fading into the background today. Under the new economic conditions the technological structure of an enterprise ceases to be the chief limiting factor of production flexibility; this role is directed to the organizational structure of management.

In our opinion, under the conditions at hand the main direction for taking the Navy ship repair complex out of the crisis is its structural reorganization, with a detailed analysis of priority productions and kinds of activity for each ship repair yard. Additional innovative motives for developing the ship repair base are required based on the following:

- radical strengthening of decentralization in management;
- rational subdivision of enterprises as a counterweight to excessive concentration;
- creation of preconditions for broad development of regional cooperation and conditions for intersectoral "transfusion" of capital;

- diversification of ship repair production;
- development of parts and technological specialization (in place of surplus item specialization) and so on.

While it was believed quite recently that the main difficulties arise for Navy ship repair enterprises because of price skews and obsolete technologies, more and more specialists presently are inclined to perceive their reasons also in an artificial narrowing of specialization, insufficient flexibility of the ship repair yard's production profile and the absence of "necessary" partners in cooperation. Based on this, the following principles can be made the basis of structural reorganization of the Navy's ship repair complex:

1. Formation of a new strategy for developing a ship repair system with consideration of the Navy's fundamentally altered goals and missions, the situation inside the CIS, the makeup of the Russian Federation Navy ship repair base and the state of its technical (technological) outfitting; in other words, it is necessary to develop a new model of development of the ship repair system in the new military-strategic and economic situation;
2. Reorganization of individual enterprises and production structures with consideration of regional development features above all, and creation of new organizationally-connected and coordinated technological chains (for example, for the series of tasks of recycling armament and military equipment); economically unpromising, morally obsolete and ecologically dirty productions must be gradually curtailed and shut down;
3. Assurance of a phased upgrading of the production-sectoral structure of the ship repair system, achievement of competitiveness of Navy ship repair enterprises, and establishment of new forms and methods of interworking among clients and contractors with consideration of the uniqueness of the new economic mechanism and with the most varied forms of paternalism (centralized capital investments, various forms of support to ship repair on the part of federal and regional structures, tax and credit features).

Problems of conversion, diversification and privatization are directly linked with realization of these principles. There are for now no reliable data on a positive connection between privatization and a growth in production efficiency both on the scale of a sector as well as at the level of a specific Navy ship repair enterprise. Systems-oriented conditions of activity, a disruption of economic ties and a production decline have greater influence for now on the effectiveness of production-economic activity. The interworking of elements of the Navy ship repair system is so complex that it seems advisable to pose the question of a sufficiently lengthy iterative adjustment of its organizational-economic structures and about creating a mechanism for structural tuning of systems for managing this production. The system must be reorganized as market relations form and as new mechanisms of innovative processes are established.

Developing a concept of structural reorganization of the ship repair system under conditions of a market economy requires taking into account modern trends of changes occurring in the concentration of production and capital here and abroad, and above all answering the most important questions:

- how the concentration reflects on effectiveness of ship repair production at the level of the yard and ship repair system as a whole;
- in what instances concentration is determined not by the specifics of ship repair but by features of market relations;
- what the features of competition and interworking of small business and major enterprises are;
- what variations of development of the Navy ship repair system are dictated by demands of the NTR [scientific-technical revolution] and the market system of economic management.

Resolving problems of organizational restructuring of the Navy ship repair system with a transition to a market economy is impossible without appropriate scientific support. And their resolution is feasible only within the framework of a purpose-oriented, comprehensive approach and requires joint efforts of a large group of specialists from various areas of science and practice.

Response to Reader on Military Farm Production

95UM0392A Moscow KRASNAYA ZVEZDA in Russian 13 Apr 95 p 2

[Colonel Aleksandr Batrakov of the Defense Ministry Provisions Administration answers questions: "Briefing for Readers: Miniature Factories With Army Residence Permits"]

[FBIS Translated Text] "I once read in your newspaper that military state farms produce enough milk to supply the entire Armed Forces. Why don't we ever see it?"—Private Viktor Kononov, Transbaykal Military District.

Colonel Aleksandr Batrakov, chief of the major construction department of the agriculture administration of the Russian Federation Ministry of Defense Central Provisions Administration, answers this and other questions.

[Batrakov] Although military state farms are located, as a rule, near the military units that consume their output, it is simply impossible to deliver such a perishable product as milk to many remote garrisons. The milk has to be turned over to dairies that, having monopolies, dictate what are literally exorbitant prices. There is just one solution—to develop our own capacity to process agricultural output. For not only milk, but also sunflower seed, sugar beets, valuable varieties of wheat, cereal crops, and fruits are not being utilized in full on account of the shortage of appropriate production capacity on our farms.

[KRASNAYA ZVEZDA] What do the existing miniature factories produce?

[Batrakov] In 1994, the network of small processing shops enabled us to provide the troops with more than 4,000 tonnes of sugar, more than 6,000 tonnes of flour, nearly 1,100 tonnes of vegetable oil and 417 tonnes of butter, 37 tonnes of dry and condensed milk, more than 6,000 tonnes of various fruits, and nearly 1,800 standard jars of vegetable and fruit juices.

The major construction plan for 1995 calls for the construction of five regional shops for processing milk, sunflower seed and fruits as a top priority. When they go into operation, we will be able to meet the entire sunflower oil requirements of the North Caucasus, Far East, Transbaykal, Siberian, and Urals military districts and of remote garrisons in the Far North and Arctic. The capacity to process up to 16,000 tonnes of milk a year will make it possible to produce 32,000 tonnes of condensed milk. If we commission a processing plant in the North Caucasus Military District, we will be able to not only fully meet the district's needs for fruit and vegetables, but also supply approximately 1,000 tons of dried fruits and 9 million standard jars of canned goods to other districts and to the fleets.

[KRASNAYA ZVEZDA] But construction takes money, Aleksandr Vasilyevich. Where is that money going to be found at a time of budget deficits?

[Batrakov] The expediency of building agricultural processing shops is confirmed from an economic standpoint as well. Calculations show that last year alone, lost profits from milk sales amounted to 16.5 billion rubles, and to nearly 4 billion rubles for the processing of sunflower seed at joint-stock enterprises. In view of this, the leadership of the Ministry of Defense is trying to accommodate the Central Provisions Administration, and the matter of appropriating the money, despite all the difficulties, is now being resolved in a positive fashion.

CHECHNYA

Poroskov: Notes on Chechnya Operations to 17 April

95UM0405B Moscow KRASNAYA ZVEZDA in Russian 19 Apr 95 p 1

[Article by KRASNAYA ZVEZDA Special Correspondent Nikolay Poroskov: "There Are Increasingly Fewer People Who Wish To Fight 'to the Last Chechen': Our Special Correspondent Nikolay Poroskov Reports From Chechnya"]

[FBIS Translated Text] Two Internal Troops servicemen were killed, five were wounded, and one armored transport vehicle was blown up on a mine during the course of the battles around Bamut that continued on April 17.

Since the negotiations between the elders and the guerrillas over the course of two days did not produce results, a reconnaissance in force was conducted after which the subunits were assigned to attack positions. Army and

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frontal aviation and artillery subunits became involved in this matter. Strikes have been conducted only against the tracts of forest to the west and east of the city. The guerrillas are actively taking advantage of the fact that strikes are not being conducted against apartment houses. According to reconnaissance data, there are up to 1,000 guerrillas in the city.

Major-General Anatoliy Rudnev reported to a KRASNAYA ZVEZDA correspondent that reinforcements are still reaching the guerrillas—and not only from the nearest populated areas (Orekhovo), but also both from the central and remote areas of the republic—Bedeno and Shatoy. Reinforcements are moving from there along the lateral road at night. Additional forces with the experience of conducting combat operations in mountainous and wooded terrain are required to block it. General Rudnev thinks that combat operations will be transferred there sooner or later.

Strictly speaking, this stage has already begun. Reconnaissance and spetsnaz subunits destroyed nine trucks with arms and munitions behind the front line. Judging by the familiar numbers, they have been conducting regularly scheduled trips to Bamut.

Samashki, which is adjacent to Bamut, has been cleared of guerrillas, the local administration is operating, militia organs have been created, and refugees continue to return. Illegal formations are disarming themselves. For example, 18 people surrendered their weapons in Achkhoy-Martan three days ago and 60 have already surrendered theirs on the 17th. Ordinary, "average" guerrillas on the whole are looking far from colorful or frightening, like the personal guard of Aslan Maskhadov, that was also observed at the talks in the village of Novyye Atagi. They are frequently frightened people who are already not shouting: "War to the last Chechen!"

In Gudermes, 161 firearms, plastic mines, 1 mortar, and grenades have been surrendered during the last four days. During that same period, 23 assault rifles, 1,180 cartridges, 64 grenades, 27 mines, and three grenade launchers were surrendered in Urus-Martan. The people who surrendered their weapons received certificates of amnesty—one for each weapon. As before, the certificates were not personalized—the guerrillas will enter their names themselves.

The commander of the Tomsk patrol-post service composite detachment in Gudermes told me that the military headquarters is operating in the city, blockhouses have been established, and vitally important facilities are being guarded—for example, only one water supply is operating in the city. From 600 to 1,000 refugees are being transported along the restored railroad bed each day. However, the blockhouses are still being fired upon at night.

The situation remains difficult in Grozny itself. According to available data, up to 200 guerrillas have

infiltrated into the city in the last two-three days. Leaflets with threats against servicemen are being distributed in the city.

Poroskov Describes 12-16 April Operations in Chechnya

95UM0401A Moscow KRASNAYA ZVEZDA in Russian
18 Apr 95 p 3

[Article by Nikolay Poroskov: "Flight Over the 'Nest of Die-Hards'"; "Our Special Correspondent Col Nikolay Poroskov Transmits From Chechnya"]

[FBIS Translated Text] From the front line of the motorized rifle regiment, far-off bursts are visible at night, and the air is filled with the pounding of the cannonade—army artillery attached to the Internal Troops is working over the wooded areas in the environs of Bamut. Back on the night of April 14, special subunits took the dominant heights which form a kind of gate to the city. At 0800 hours the operation began. But the attackers, supported by several tanks and an artillery battalion, were met with a storm of fire from all types of weapons by 750 to 1000 fighters. In the words of Lt-Gen Anatoliy Antopov, the combat actions were halted not because of the strong resistance (two thirds of the city were already taken), but at the request of the elders. Seven honored elders came to the commander of the Armed Forces grouping and proposed holding talks with the fighters, in order to convince them to surrender.

On 15-16 April, areas of concentration of the fighters were discovered, and fire was delivered on them. The most active grouping of fighters today in the southwest is commanded by Ruslan Geloyev. His presumed large forces are under cover at the former garrisoning point of a division of Strategic Rocket Troops which left in the mid 1960s. According to some data, Geloyev's staff, a weapons and ammunition warehouse, and a hospital are ten to twelve meters down in underground communications in some of the remaining unburied shafts.

A rather large part of the armed formations of Dudayev has gone to the mountains beyond the range of the army artillery. The basic direction of the retreat is Shagoy and Vedenov, where the staff of Aslan Maskhadov is presumed to be located.

But by no means all have left. There are still fighters in the populated areas controlled by federal troops. And the villages themselves are "stuffed" with mines and field charges. In the last two days, two local residents have been blown up on them while returning to their homes.

The military have also had their losses to mines. Traveling an hour behind our APC over the same destroyed railroad crossing, the driver of a "Ural," Jr. Sgt. Oleg Ryazanov, set off a mine, receiving fractures (one open) to his feet. The combat engineers remove up to 30-50 mines a day. Before there were more antitank mines, now they are antipersonnel.

In conversation with the KRASNAYA ZVEZDA correspondent, Lt-Gen Anatoliy Antonov said that he had conveyed the amnesty decree to truce envoys from the fighters desiring to surrender. This proved sufficient for many, who had still not laid down their weapons, to decide on their future. The command of the Internal Troops assumes that it is not important who lays down their weapons to whom, the important thing is that Antonov himself receive them from representatives of the local authorities. The general is issuing documents for relief from criminal responsibility. Elements of municipal militia are being created in the villages of Noviy Askhon, Katan-Yurt, Valerik, Novyy Sharoy and others.

Two days ago, six km south of Shali, a "Grad" launcher served by mercenaries was discovered and destroyed along with its crew. To this point, the Dudayev followers have not buried them, in contrast to their own dead.

Back on April 12, the army groupings "Sever" and "Yug" were combined into one, commanded by Maj-Gen Gennadiy Troshev. He told the KRASNAYA ZVEZDA correspondent that the conflict was basically localized. Proceeding from this fact, some of the formations of Russian troops were preparing to march to their permanent garrison points. This applies first of all to the 19th Division of Col Vasilii Prezemenov, which has gone through the entire war. For now small tank and artillery subunits are remaining to support the Internal Troops, which in the event of failure of the elders in negotiations with the fighters will make another attempt to take Bamut, called by many here a "nest of die-hards."

13 April Chronicle of Events

95UM0391C Moscow KRASNAYA ZVEZDA
in Russian 13 Apr 95 p 1

[Article based on Russian government press service and ITAR-TASS reports: "Chechnya: Chronicle of Events"]

[FBIS Translated Text] The military and political situation on the territory of the Chechen Republic has not undergone any substantive changes. The joint group of federal forces on Chechen territory has liberated the towns of Sakan-Yurt and Achkhoy-Martan from the militants. Residents of these and other communities are voluntarily surrendering weapons. In particular, residents of the villages of Ishkhoy-Yurt and Engel-Yurt have voluntarily turned over several dozen firearms and a large quantity of TNT to Russian forces.

A stockpile of weapons and ammunition was discovered in Shali. It contained several dozen firearms and more than 50 grenades. The personal diary of the chief of Dudayev's state security department, Sultan Geliskhanov, was found and confiscated.

Civilian residents of the town of Samashki in western Chechnya who wanted to establish contact with the command of the federal troops were shot last Tuesday by a division of Chechen militants who had previously fought in Abkhazia. Eyewitnesses said that the area

surrounding Samashki had suffered negligible damage during combat operations. There is no destruction in the central part of the town. Military sources report that snipers have hidden in a number of parts of the town and that apartment building basements have been converted into permanent weapon emplacements. Russian forces are firing only when fired upon. Russian demolition experts have cleared the Samashki area of mines, but Dudayev-led militants are laying new ones.

The head of the Russian Ministry of Internal Affairs' public relations center, Vladimir Vorozhtsov, denied reports in a number of news media of an "enormous number of casualties" among the civilian population as a result of the federal forces' operations in the Chechen settlement of Samashki. One hundred thirty militants were killed and 124 taken prisoner in fierce fighting. Russian units lost 13 men, Vorozhtsov said.

Yegorov Replaces Kulikov as CINC

95UM0393A Moscow KRASNAYA ZVEZDA in Russian
15 Apr 95 p 2

[ITAR-TASS item: "Chechnya: Militants' Activity Waning"]

[FBIS Translated Text] Illegal armed formations have not mounted any active operations in any area of the Chechen Republic in recent days. Combat operations are now concentrated near the community of Bamut, which federal troop units have surrounded.

Acts of sabotage by five-man groups of militants have occurred in Grozny's Staro-Promyslovyy and Zavodskoy Rayons.

In highland communities in Shatoyskiy and Vedennyy Rayons, the local population is resisting attempts by militants to take refuge. There are reports that the militants have carried out acts of intimidation: Homes and roads in rayons in which the local population does not support Dudayev are being mined.

The new commander of the Joint Group of Forces in Chechnya, Colonel-General Mikhail Yegorov, who is Russian Deputy Minister of Internal Affairs, has taken up his duties. He replaces Colonel-General Anatoliy Kulikov, commander of the Russian Ministry of Internal Affairs' Internal Troops.

Legal Actions Against Servicemen Refusing To Serve in Chechnya

95UM0384A Moscow KRASNAYA ZVEZDA in Russian
7 Apr 95 p 2

[Interview with Maj Gen of Justice Stanislav Gaveto, deputy chief military prosecutor, by Stanislav Telegin: "The Court Will Determine the Guilt of the 'Refuseniks'"]

[FBIS Translated Text] The tragic events in Chechnya have revealed many morbid facets of the life of our army and of the entire society. They doubtless include the appearance of servicemen who have refused to go to the

region of combat operations or who abandoned their units in the zone of the conflict. Today this problem is often exaggerated by the mass media and some try to gain political capital through it. At the same time, the fate of the "refuseniks" themselves is of little concern to them, while this fate is not an enviable one. These servicemen have to answer to the law. As Chief Military Prosecutor Valentin Panichev recently stated, there have already been more than 100 criminal charges filed in such matters. This problem is rather new for our army. Today Maj Gen of Justice Stanislav Gaveto, deputy chief military military prosecutor, tells about some of its peculiarities.

[Telegin] Stanislav Eduardovich! Has the Chechen crisis brought some changes to the work of the Main Military Procuracy?

[Gaveto] Yes, the "Chechen factor" is definitely present in our work. It is sufficient to say that during the time of combat operations we have received almost a thousand appeals from servicemen and their parents—their mothers, as a rule. Most of them involve soldiers and sergeants leaving their units in the zone of the conflict or prior to being sent there. The letters include the request that no criminal charges be filed against them. It is characteristic that all of the appeals are being drawn up in accordance with recommendations from the weekly ARGUMENTY I FAKTY, which in the first and second issues of this year published the article "The Soldier and His Right" under the rubric "How to Get Around the Law Without Violating It."

[Telegin] But naturally criminal charges are being filed?

[Gaveto] Yes, but not for all of the cases. Whereas today there are more than a hundred such cases, overall there have been hundreds of servicemen who are in the field of vision of military procuracies in connection with their refusal to take part in combat operations.

[Telegin] So they forgave the rest?

[Gaveto] No, it is not our business to forgive. Our duty is to take a close look at each case. In 99 cases, the military procuracies issued decrees on the refusal to bring criminal charges and 62 cases were ended for lack of a corpus delicti. The motives and bases of the action are carefully examined in the course of the investigation. All of the circumstances of the case in its totality are assessed comprehensively, fully, and objectively. This is what the law requires.

[Telegin] So the attitude toward such servicemen is rather humane?

[Gaveto] Again, not toward all. For example, the procuracy of the Grozny garrison initiated 25 criminal cases with respect to servicemen who abandoned their units in the combat situation with their weapon and ammunition. The danger to the public from such actions is obvious. And clearly humaneness is out of place here.

[Telegin] It is interesting to know whether your workers encountered any surprises while investigating cases of this kind.

[Gaveto] Of course they did. There is this surprise, for example: in essence, some of the "refuseniks" are not really that. And their reference to expected combat operations was only a cover for willful abandonment of their unit. Thus, the military prosecutor of the Syzran garrison filed criminal charges against Pvt V. Myazitov. In January of this year, he and his mother wrote letters to various authorities, including to the president of Russia. They stated that his unit was being sent to Chechnya and that he as a confirmed pacifist willfully left the place of his service. At our request, a check was made and it turned out that it was not even planned to send Myazitov's unit to Chechnya. A search has now been declared for the deserter.

[Telegin] How do real "refuseniks" usually justify their actions?

[Gaveto] Most often through illnesses—their own and those of close relatives. Less frequently through disagreement with the policies of the country's leadership.

[Telegin] What categories of servicemen catch your attention?

[Gaveto] All sorts. Judging by the number, they are mostly servicemen in compulsory service and junior officers. After them come warrant officers and then senior officers.

[Telegin] And in terms of the geography of their places of service?

[Gaveto] Moscow Military District is sadly in the lead here followed at a significantly distance, to be sure, by Ural Military District and Siberian Military District.

[Telegin] There is now a lot of talk about there supposedly being no reason to try the "refuseniks." There is no legal basis for their prosecution, because supposedly the very actions of our troops in Chechnya are illegal....

[Gaveto] This is not so. All of the criminal charges have been filed under criteria of crimes covered by articles 246, 247, 238, and 239 of the Criminal Code of the Russian Federation. These criteria are clearly manifested. But the court will determine the specific guilt of each individual. As for the legality of the combat operations, there is a presidential edict and a decision by the government.

[Telegin] And one last question, on the position of some newspapers that essentially provoke servicemen into committing crimes. It is clear to all that this is immoral. But how does the law see this?

[Gaveto] We unequivocally consider this to be a violation of the law. And if you mean the mentioned article in ARGUMENTY I FAKTY, on 6 February of this year we sent a letter in this connection to the prosecutor in

Moscow proposing that he resolve the matter of the responsibility of this organ of the press. According to our information, the examination of this matter is coming to an end.

MVD Claims of Heavy Casualties Taking Shali

95UM0398B Moscow KOMSOMOLSKAYA PRAVDA
in Russian 12 Apr 95 p 2

[Article by Aleksandr Yevtushenko: "Less Than Half of Our Company Left at Shali"; "Report From a Chechen City Which According to Reports From Official Sources Was 'Taken Without Casualties'"]

[FBIS Translated Text] When the assault of Shali began, and this was at dawn, I was in this settlement. I was awakened by a firefight close by, more intense than anything earlier here.

"Time to go," said Magomed, with whom I was staying.

"Slip down the byroad while you can. Pretty soon the carnage is going to start here, and you won't get out."

With difficulty, and under fire, I managed to slip by the Chechen and Russian positions. It was simply that their main attention at that moment was concentrated on one another. And there, along the bank of the Argun River, hundreds if not thousands of barrels were spewing out tonnes of metal.

The next day it was declared over Central TV that Shali had been taken by federal troops without casualties. I came back just a few days later. The recently lively village looked like it had died. There were vacant eyes of windows, naked ribs of roofs, enormous bullet holes in walls, and houses demolished by shells. But also not a few that were intact. Life still glimmered in them. Many had abandoned the village before the assault. But some had stayed. Including Magomed.

"I don't know what they meant by bloodless capture of Shali," he said. "The battles on the outskirts were simply terrible. Less so inside the village. But were quite a few people fell. Why don't you ask the soldiers about all of it."

The army subunits enclosed Shali in a dense ring, set up road blocks on the roads, and awaited further orders. Recently "public-order soldiers" entered the village, internal troops and *spetsnaz*. They began to "clean out" the blocks. For the time being they sought only something to live on; they will set about cleaning out the fighters later, when the refugees return. On the first pass the valuables and apparatus "walked off." On the second, rugs. And on the third they dragged off construction materials for preparation of emplacements, and foodstuffs to vary their rations.

In response to the question of how Shali was taken, none of the MVD Troops had much to say. We got here late, they said. So I went to the Army troops at the road blocks. At the first one, the soldiers gathered round, and

called an officer. "We wouldn't talk to ROSSIYSKAYA GAZETA, or the others that they bring us here, they wouldn't print it anyway, but we respect 'Komsomolka,' for honesty and bravery. We'll tell everything that happened. You just print it."

The soldiers' story that I got was perhaps somewhat confused and unkempt. But I will tell it like it was, except for the strong language.

"First we, the first company of the 424th Motorized Rifle Regiment, took a dairy farm on the other bank of the Argun. Then the bank of the river. Without artillery preparation, only mortars, it took around ten minutes. We crossed the river and bogged down. Positions were 200 meters from one another. But here there was heavy, aimed fire, and lots of sniper fire. We couldn't move. In one trench there was me, the platoon leader, and another six men. Three got it immediately—we didn't even know where the fire was coming from. A scout company of our regiment had taken the bank with us. All of their officers were hit—not one was left. They tried to carry out the wounded under aimed fire. Impossible. They screamed over the radio, called for assistance, asked for cover. No one responded. Only Igor Moldavanov, the gunner on the IFV of the company commander, arrived in his vehicle and covered us with his fire. While we were dragging out the wounded, and the bullets were whistling around us, a "fly" of a shoulder-launched antitank rocket launcher set fire to Moldavanov's IFV. Igor burned up inside it, and only his helmet was left—no arms, no legs, no head. The mechanic had 25 percent burns, but by some miracle jumped out of the vehicle. Out of our platoon, 24 men, only 8 remained. Many were seriously wounded. Andrey Tayurskiy, whom we pulled out, took a bullet right in the head. He's dead, probably. There are two surviving from my squad, me and the mechanic. I myself don't know how I survived. No one can say that I was a coward and hid. Aleksey himself blessed me before Chechnya. It helps I guess, I've only had a few scratches. Now they left our company here, at the road blocks. Not for special merit. It was just that it used to have 105 men, and after the assault 43 remained. Soon, they say, we have to go to the mountains. And many boys will still fall. For what, I don't know. Who needs this, I wonder. Mothers? In my unit I would have calmly served out my remaining six months and gone home. But now, with just days remaining before demobilization, where will I go from here? Here are my friends, with whom I've gone through so much.

The battalion commander says, I understand the demob people—you have two weeks left to serve. I'm going to get you all together and say, 'whoever wants to go on, let him. And those who want to stay, there won't be any charges.' But how can we abandon our friends? And our company commander, he is Sr. Lt. Stepanov, he was with us in this carnage. And we respect him. Not like the old company commander, Captain Deryabkin. I don't know if what I'm going to tell you now will go any further. They shot two of our boys. One day our then company

commander Deryabkin said to us, who will go with me on an operation? He was drunk, and his head was pounding. Several boys agreed to go. The first operation was successful—they killed five Chechens and stopped some "Zhigulis" with weapons. The captain led them to the second. And he himself was even more drunk. Two out of boys, Tarasov and Shaporshnikov, were brought back dead. Captain Deryabkin had shot them. He wrote them off "for looting." But in fact they had just been shot, out of drunkenness.

They still respect us contract troops, at least somewhat. But the officers beat the draftees for anything. Recently they got me too. Well, I was drunk, who isn't sometimes? The officer and warrant officer who caught me were not as sober as me. And they began to beat me up. The officer slapped me in the face. They knocked me to the ground and began to kick me. I got up, I couldn't control myself, and I hit him in the mug. He went for his rifle. He would have shot me, too, if he hadn't been restrained. But they broke my ribs. I got back from the hospital yesterday.

I didn't come fight in Chechnya for the money, or so that lads would die here. It's already my fortieth anniversary here, I've seen it all. But they just tricked us about the money. They promised one-and-a-half 'lemons' and one 'lemon' a month. We still haven't seen the money. But we signed the contract 'until the conclusion of combat actions in Chechnya.' And there's no end in sight.

My name is Yegor, I'm a conscripted sergeant, twenty-one years old. They say the Army is a good school. For me it is a school of murder. I have learned that well here. I don't know how to do anything else. Soon I'll be demobilized. I'll go to the civilian world and keep on murdering. In the best case I'll come back to Chechnya as a contract troop, or to some other hot spot. But now I dream of a bath. I haven't washed in a month.

Another road block.

"Hey, countryman, let me drive your car," the "commander" got out the words with difficulty and tried to slide behind the wheel. Bare to the waist, with bug bites on his body, and quite drunk.

"No, I'm in a hurry," I tried to object.

"Hey, its okay, out in the countryside, what's the problem?"

"Leave him alone," it's our guy from 'Komsomolka'. "A soldier had come up and was reasoning with the "commander." He had no insignia, but did have a shiner under one eye.

"Aw, to hell with you, drive on. Here comes a Chechen."

I hadn't gotten far when I heard short bursts of automatic fire. I looked around and saw the "commander" shooting under the feet of an old Chechen, forcing him to do a senseless dance. Evidently he too had refused a ride. Grozny, where "a peaceful life has been practically

restored" is just a few kilometers up the road. Behind lies Shali, taken "without a single casualty."

P.S. I have not mentioned any names of soldiers here, although I had them in my notes. I simply feared for these boys. What if the commanders dealt with them "in their own way," and wrote them off "for looting"?

Federal Military Construction Directorate Work in Grozny

95UM0405C Moscow KRASNAYA ZVEZDA
in Russian 19 Apr 95 p 2

[Article by Major-General Aleksey Dubovik: "The Center of Grozny Will Be Rebuilt by the Forces of Russia Spetsstroy Military Construction Directorate"]

[FBIS Translated Text] The electric locomotive gave a long toot and the train set out on its journey. The first rail serial, that consisted of 57 rail cars loaded with excavators, bulldozers, dump trucks, diesel electrical generators, compressors, and other equipment, set out for the Chechen Republic and precisely for the terminal station Grozny.

The new responsible mission was assigned to the military construction personnel of the Federal Directorate of Special Construction under the RF Government which Colonel-General Aleksandr Tumanov heads. The Directorate Chief visited Grozny recently with a team of officers and familiarized himself with the facilities for the impending construction. Of course, the picture appeared to be hopeless, the entire center is practically in ruins. Naturally, it was painful for me to look at all of this since I performed compulsory military service in Zavodskiy Rayon 30 years ago.

Our military construction directorate which Major-General Anatoliy Polyakov heads has already been created in Grozny. It will conduct restoration work and also begin housing construction for the refugees, border guards, customs services and the families of officers who are performing service on the territory of Chechnya and in neighboring regions.

According to the RF Presidential Edict, the Russian Government has developed a targeted program for the restoration of the economy and social sphere of the Chechen Republic and resources in the amount of 5,300 billion rubles have been allocated. Spetsstroy [special construction] subunits will have to acquire over R100 billion this year. Right now the entire territory of Grozny that is subject to restoration has been divided into 29 sectors of which the 4th and 5th have been assigned to Spetsstroy. And this is the central portion of the city which underwent the greatest destruction—the "presidential palace", the railroad station, the Council of Ministers building, the MVD [Ministry of Internal Affairs] and MB [Ministry of Security], apartment buildings, schools, kindergartens and public eating establishments.

We are enlisting the best specialists for the accomplishment of this task. The Directorate chief's representatives—Major-Generals Yevgeniy Serognedov and Boris Papchuk, who coordinated the plan for the impending operations with the territorial organs of executive power and the Russian Ministry of Construction which is the state customer, visited the site of the impending work. Locations were determined for the deployment of Pioneer facilities and housing garrisons for the builders. This is an affiliate

of VNII [All-Union Scientific Research Institute] "Biotekhniki", "Groznyy" Tourist Facility in the village of Chernorechye, and "Arena" Hotel.

So, the foundation has been laid. The first pioneer detachment numbering 100 men flew in by airplane right after the rail serial to Chechnya. After a short time has passed, you can believe that apartment buildings, plants, institutes, schools and gardens will rise from the ashes.

CAUCASIAN STATES

Azerbaijan: Models for Republic's Armed Forces

954F2125A Baku ZERKALO in Russian 15 Apr 95 p 3

[Interview with Deputy Minister of Defense of Azerbaijan for Indoctrination and Chief of the Directorate for Personnel Work Colonel Talekh Aliyev by Nurani under the rubric "Facts, Commentary": "The Armed Forces: What Should They Be?"]

[FBIS Translated Text] *Questions of military organizational development have paramount importance for any nation, and the former union republics are no exception in this regard. A wholly definite "specific local nature" is also discernible in this age-old rule for Azerbaijan: even if one takes into account that the war with Armenia over Nagorno-Karabakh is close to an end, no one can vouch for the fact that this military conflict will be the last one in the history of independent Azerbaijan.*

Any army, as is well known, is first and foremost soldiers and officers, and then the hardware, weaponry etc. That is precisely why we addressed these questions to Deputy Minister of Defense of Azerbaijan for Indoctrination and Chief of the Directorate for Personnel Work Colonel Talekh Aliyev.

[Nurani] Several methods of manpower acquisition exist for the Armed Forces. The army of the USSR was composed of draftees, while in the United States it is professional, with a draft only in the event of active military operations. What kind of army will Azerbaijan have in the future, after the war with Armenia is over?

[Aliyev] It has been codified, on the basis of the corresponding laws, that manpower acquisition for the Armed Forces of the Republic of Azerbaijan will be of a mixed type. The Armed Forces are a regular cadre army today in which are serving, along with conscript servicemen, partially mobilized officers and gizirs (warrant officers) mobilized in connection with the war—professionals of the military arts. As for a professional army in the sense that it is being discussed by journalists today, despite widespread opinion it is not an indispensable attribute of developed countries—the armies of many of them are manned using draftees and cadre professionals. There is no "purely professional" army in that sense anywhere.

[Nurani] Enlisted personnel are clear enough. It is understood that the Baku Higher Combined-Arms Command School will be the foundation for the training of cadre officers. Specialists in many fields, however, will have to be trained abroad. Toward the educational institutions of what countries is the National Army oriented today?

[Aliyev] The cadre officer composition of our army today is, one way or another, representative of the Soviet military school. And it is very difficult to switch to something else. There is a desire to train our future officers in Russia, Kyrgyzia, Uzbekistan, and in Ukraine. We would of course like to orient our army to

a Western model, the more so as the recent local wars have shown that the Western military school has largely outstripped the former Soviet school today. But the necessity of switching schools could arise in the future, first of all, time till tell when we will overcome our common misfortune, and second, the change of a school is a change in tactics, weaponry, and much more. It is a military-political decision, and such a decision can be made only by the military-political leadership; it would not be proper for me to discuss that subject.

[Nurani] What do you, as a professional military person, see as the causes of the lag in the Soviet school?

[Aliyev] An army, as is well known, is part of society. A considerable lag in development behind the West has been discernible in the USSR in all areas in recent years, and strictly speaking that was the reason for the "Gorbachev restructuring." An overall lag, of course, cannot fail to affect the army as well, in technical sophistication, in the training of personnel etc. The lag was moreover noticeable in all areas, even in places where the Soviet school was still preserved, the leadership; alarming symptoms have now been manifested.

[Nurani] While we have clarified the reasons for the lag in the Soviet military school behind the Western competitors, everybody explains the recent setbacks of the Azerbaijani army in their own way. And while no one disputes the internal instability of Azerbaijan as a reason for the military failures, there is still no uniform opinion with regard to the time lag in the military organizational development of Azerbaijan behind the analogous processes in Armenia, but the time factor is not cited as one of the primary ones...

[Aliyev] I would single out two reasons for the military setbacks before the fall of 1993: they are, first of all, the national disarray, the rivalry of various strains and groupings in the struggle for power, as a result of which the work to create the army in the fullest sense of the word was simply not carried out at all; and, second, the time factor itself. This is unfortunately not a propaganda excuse. During the years when Azerbaijan was still not doing any work whatsoever to create its own armed forces, Armenia had by all rights created regular, battle-worthy troops. They entered into sweeping confrontation with the Azerbaijani army starting in the spring of 1993, and our units were at that time essentially regional self-defense battalions or military units tightly tied to political groups, easily susceptible to internal political events. These internal political confrontations and instability clearly provided no opportunity to create a genuine army. A regular army, meanwhile, was all that could restrain the onslaught of regular troops, not regional self-defense battalions, even if they were called national armed forces and they had many patriotic volunteers and brave and determined warriors fighting in their ranks.

I myself was at the front lines in the summer of 1993 observing offensive operations by the Armenian troops,

and I should say that clear-cut organization, the presence of small tactical assault subunits, and operational-maneuver groups operating in classical variations were all discernible in each battle. One cannot create such an army in a day, or even a year. Systematic work on the creation of our own army in Azerbaijan began only in November 1993, when after somewhat of a stabilization of the domestic political situation serious clarifications were made in the legal foundations and principles for the organizational development of the armed forces, and political, organizational and indoctrinational steps were taken to form a battleworthy army. We were not forced to wait long for results, by the way—the battles in December of 1993 and January, February and especially April 1994 showed that the Azerbaijani army had been altered somewhat over that brief period. A turnaround ensued—the attacking Armenian army was essentially forced to forego the development of the offensive at that time.

Many are now saying, especially after the Chechen war, that our soldiers do not know how to fight and are weak in spirit. I reject such judgments! Our army demonstrated the highest morale, combat and psychological qualities at the end of 1993 and beginning of 1994, and especially in April, despite the brief training. Our fighters can fight and are fighting no worse than the Armenians or the Chechens. It is a matter of internal stability and in working to create an army, and in no way some illusory "inability to fight" of the Azerbaijani soldiers. They showed what they are capable of, I repeat, during their large-scale operation in the [Terter] sector, which was distinguished from other operations by the density of fire and intensity of the fighting, where Armenia concentrated the best of its units but failed in its plans.

Judgments regarding which [illegible text] school and military-political conceptual model better meet Azerbaijani interests undoubtedly sound somewhat untimely. There is also no doubt that one should be oriented toward what is best, and not what is easiest, in military organizational development.

We will leave to the specialists an analysis of the strictly professional, military-technical and military-economic aspects of a possible re-orientation of the military organizational development of Azerbaijan from the "Russian" to a "Western" or "NATO" variation. There are also many purely political realities in this issue as well, however.

A military-theoretical orientation assumes, first of all, some sort of military-political dependence on the countries supplying the weaponry. The operation of any weaponry and combat hardware presupposes a need for spare parts, ammunition, instructors, etc. And a supplier country would only need to "cut off" military deliveries to Azerbaijan for our army to end up in an exceedingly difficult situation.

In today's situation, when the most reliable ally of Azerbaijan—Turkey—is part of NATO, and Pakistan, though not a member of that organization, is nonetheless oriented toward an alliance with the United States, while Russia is becoming more and more inclined to support Armenia (the representatives of the official authorities of Azerbaijan are saying this as well), there are far greater grounds to expect such a "surprise" from Moscow than from the West.

A second aspect pertains more to domestic policy. An orientation toward this or that path of military organizational development assumes, of course, a certain degree of repetition not only of hardware, armaments and tactical methods, but also interconnections between the army and civilian institutions. While the army in Western democracies is one of the institutions of the state, and strict civilian political control has been established over it, in the socialist countries the entire state is an auxiliary service to some uncontrolled and unsubordinated army—some "sacred cow." But it is not milked, it milks all the rest. As a result the armies of the Western countries, under strict controls on the part of the civilian society and possessing good fighting ability, did not have an opportunity to fan military spending to astronomical dimensions, while in the former socialist countries the "inviolability" of the army, not possessing sufficient fighting ability, nonetheless siphoned off to itself the lion's share of the budget. And to judge by the Chechen war, the uncontrolled nature of the army, military spending and the open dictate of the power structures remains in Russia to this day.

We cannot fail to take all of these realities into account in the selection of our own military strategy.

INTERREGIONAL ISSUES

Moscow-Backed Ajaria Strongman Portrayed

95UM0379A Moscow MOSKOVSKIYE NOVOSTI
in Russian No 21, 26 Mar 95-2 Apr 95 p 11

[Article by Akakiy Mikadze, MOSKOVSKIYE NOVOSTI correspondent in Georgia: "Colonel Among Generals"]

[FBIS Translated Text] During Zviad Gamsakhurdia's ascent to power Ajaria's leader worked in Tbilisi as the republic's deputy minister of everyday services for the public. However, their relations were not confined to this. At that time a narrow circle of people already knew about the friendship between Gamsakhurdia and Abashidze. The point is that as long ago as the 1920's the writer Konstantin Gamsakhurdia, the president's father, and Memed Abashidze, Abashidze's grandfather, a well-known public figure and the first chairman of Ajaria's National Assembly, had a family friendship.

Appointment

"One's own" man in Ajaria was very needed. After the abolition of the South Ossetian Autonomous Region,

which was gripped by separatist sentiments, representatives of Georgia's national liberation movement strove for the establishment of a unitary state and prepared the ground for the abolition of Ajar autonomy. Naturally, Abashidze could not support such a radical course. The matter came to a tragic outcome.

On 30 April 1991 at 2 a.m. Nodar Imnadze, deputy chairman of the Supreme Soviet, speaker of the "Round-table" bloc, burst into the office of Abashidze, chairman of the Supreme Soviet, with an assault rifle in his hands and opened fire at those present. The wounded Abashidze with retaliatory fire from his pistol mortally wounded the instigator of the shoot-out. This tragic outcome cooled the ardor of advocates of the abolition of the autonomy and strengthened the position of the new leader.

A little later, however, as a result of multiparty elections, a situation emerged in Ajaria, which did not guarantee Abashidze the chair of chairman of the Supreme Soviet. Then Gamsakhurdia himself came to the first parliament session and demanded that deputies hold an open vote and vote only for Abashidze. The president included insubordinates in the camp of the homeland's enemies and traitors. Deputies did not support Abashidze's candidacy twice. However, on the third attempt he was elected.

Abashidze "had a hard time" with the rebellious parliament for approximately another year. Then he followed a proven and tested path. He appointed some rebellious deputies to important posts. Then he completely dissolved the legislative body and transferred its powers to the Presidium of the Supreme Soviet.

President's Favorite

President Gamsakhurdia found out about the Moscow events of August 1991 in the high-mountain settlement of Kazbek, where he vacationed with his family. Aslan Abashidze reported this to him over the telephone. Georgia's frightened leader did not dare to return to Tbilisi and sought refuge in mountains. It was Abashidze who urged him to accept all the demands of members of the State Committee on Extraordinary Events, who insisted, first of all, on the disbandment of militarized formations. Soon they received General Shuralev, USSR deputy minister of defense, in Tbilisi and agreed to all the points of the ultimatum.

Moscow, first of all, demanded the disarmament of the national guard commanded by Tengiz Kitovani. He did not obey the president's edict and under the pretext of training withdrew members of the national guard to Rkonskoye ravine located 60 km away from Georgia's capital. From that day an open confrontation in the camp of "followers of Zviad" began, which subsequently led to the overthrow of the first president. Abashidze's position with regard to Gamsakhurdia also changed. During the coup in December-January 1992 Abashidze refused to help his patron. He was one of the republic's

few leaders, who did not send armed soldiers to protect the bunker of the government building. On the day of Gamsakhurdia's flight from Tbilisi he telephoned Dzhabe Ioseliani, leader of Mkhedrioni, and congratulated him on his victory. Abashidze asked him not to begin personnel reshuffling in Ajaria. In confirmation of his loyalty he sent 250 Kalashnikov assault rifles produced in Romania to Mkhedrioni members and distributed 2,000 such barrels to his relatives in Ajaria in case of a possible invasion of members of Kitovani's national guard. Well aware that in Tbilisi he had a menacing opponent in the person of Kitovani, Abashidze began to seek contacts with Moscow.

Moscow's generals supported Ajaria's leader. The Batumi sea port and custom house—the only window in the former USSR into Turkey—became the bait for them. Under conditions of the collapsed Union it became possible to engage without control in the export of products of the military-industrial complex and of the natural resources of the Soviet Union. According to various data, in recent years products worth several billion dollars were exported through this loophole and not a single cent from the profit was deposited in Russia's or Georgia's accounts. Was it not for these services that the RF Ministry of Defense conferred the title of colonel on Abashidze? He shows the gilded shoulder-straps to visiting guests with pride.

Ambitions

Having gradually strengthened his positions, Abashidze surrounded himself with close and distant relatives. At the same time, however, he did not forget to renew his retinue periodically. For example, he imprisoned brothers Asanidze, one of whom worked as the mayor of Batumi and the second headed Khelvachurskiy Rayon, accusing them of preparing an attempt upon his life. He transferred Iliya Tsulukidze, chief of the local security service, to another job for "dulling vigilance," but entrusted him with the revival of the regional department of the Communist Party of Ajaria. Abashidze's slogan "rich people—rich Ajaria" was embodied in the fact that two banks, which had basic currency accounts in Europe and America, were established there under his direct management. In four years of his rule in Ajaria 92 motor-vehicle and railroad bridges and nine secondary schools were built with extrabudgetary funds. The construction of tennis courts with due regard for all international standards is being completed. An opera house was opened, on the stage of which three performances have already been held. Every new production costs tens of thousands of dollars. To this day it remains a riddle for many from where money is derived for such a large-scale activity.

Various sources confirm: Dividends come not only from the Batumi sea port and custom house, but also from other spheres. In particular, at the beginning of 1992 a total of 55 ships were listed on the balance sheet of the Georgian Shipping Company, but today their number

has decreased to 18. The rest, as unsuitable for shipping, were sold or transferred to private companies for long-term leasing. Judging by the selection of managerial personnel, these companies are controlled basically by the first person of Ajaria. If the situation continues in this way, there is the danger that in the very near future Georgia will remain without a merchant fleet.

There are also other versions of the Ajar leader's enrichment. Ajaria is the transit corridor for the transport of drugs to Europe. One and a half years ago the CIS detained a cargo of dry morphine valued at 800 million dollars in the city of Trabzon. These goods crossed the Georgian-Turkish border in Batumi.

'Charity' in the Name of Survival

It is obvious that the Ajar leader, despite his considerable fortune, does not throw away money. Ignoring Tbilisi (he was not even once there after Gamsakhurdia's overthrow), he relied chiefly on Moscow and achieved considerable success. For example, bypassing Shevardnadze, he achieved the arrival of Pavel Grachev, Russia's minister of defense, to Batumi. He made his Tbilisi apartment available to General Fedor Reutu, commander of a group of Russian troops in the Transcaucasus. General Vladimir Semenov, commander of Russia's land forces, is in Batumi more often than among the forces. His last visit to Abashidze was in January of this year, when the Russian Army stormed Grozny. Abashidze himself does not hide that he is well received in many offices in the apparatus of President Boris Yeltsin. It is also known that not long before the fall of Sukhumi, in the summer of 1993, he agreed to replace Shevardnadze, whom very many people in these offices do not

like. The circumstances changed only after Shevardnadze's unexpected consent to Georgia's entry into the CIS. Abashidze was outside the game.

Most likely, Russia's interests in Georgia are above the ambitions of the Ajar leader. He especially began to worry after the arrest in Kiev of Loti Kobaliya, commander of armed formations of "followers of Zviad." It follows from his testimonies that during the Georgian-Abkhazian war the Sukhumi regime enjoyed the support of Russian generals and of the Ajar leadership.

Not long ago a new blow was struck at Abashidze: General Vladimir Gladyshev, commander of the Russian division located in Batumi, who was a kind of shield for Abashidze, was relieved of his post. General Fedor Reut, who vacated the Tbilisi apartment, also gave a sign that the rules of the game changed. Igor Georgadze, chief of Georgia's security, whom the Ajar leader publicly accused of preparing terrorist acts against him, turned out to be in the enemy camp. At the same time, representatives of the opposition from Tbilisi recently have begun to visit him frequently with promises of support.

Not long ago Shevardnadze flew in to see the Ajar leader and, in order not to cause his suspicion, he flew in without guards. After the meeting Georgia's head publicly announced that Aslan Abashidze was his friend, who will always have support. Especially after the edict on the declaration of Batumi "porto franco"—a free economic zone. However, there is also another opinion. It lies in the fact that, if Shevardnadze does not give the go-ahead for the deployment of Russian troops in Georgia and does not sign the appropriate agreement, Aslan Abashidze can prove to be a trump card for Russian generals.

DEFENSE INDUSTRY & CONVERSION

SLBM Development 'On Brink of Collapse'

MM1904103995 Moscow KRASNAYA ZVEZDA
in Russian 15 Apr 95 p 6

[Article by Viktor Gupalov, general director of the "Krasnoyarsk Machine Building Plant" State Enterprise: "Urgent: Missiles—Delivery Vehicles or Needing Deliverance? Production of Naval Nuclear Delivery Vehicles on Brink of Collapse"]

[FBIS Translated Text] In his speech to the State Duma 24 May 1908 P.A. Stolypin answered the question, "Does Russia need a navy?" by saying unequivocally: Russia needs a navy as evidence that the people have the strength and the potential to keep the sea in their power. However, he said that ground-based defense forces are not enough to defend the coasts, what are needed are mobile, free-floating fortresses, armed as well as the fleet of the potential adversary.

Recognizing the well-known Russian statesman's wisdom, it is logical to address the current state of the Russian Navy. Does Russia have mobile, free-floating fortresses? Yes, it does. Namely nuclear-powered submarines with submarine-launched ballistic missiles [SLBM's], which form the basis of the sea-based component of Russia's strategic nuclear forces [SNF].

Does Russia need the SNF sea-based component? This question was answered during the signing of the START II Treaty whereby priority is given to the development of the SNF sea-based component and by the year 2003 they should form one-half of the country's entire nuclear potential.

Do our nuclear submarines have modern armaments? It can be said that they do. Russia's SLBM's not only are not inferior but are even superior in terms of specifications to the SLBM's of the potential adversary. That is the result of the activity of a complex of organizations and enterprises created by the efforts of several generations of scientists, engineers, and workers. Primarily the result of the activity of the design bureau led by V.P. Makeyev, whose unique qualities as a scientist, engineer, and organizer made it possible within a brief period of time to perform the tasks of creating an effective counterbalance to the strategic weapons of the potential adversary's submarines.

Are we preserving what we have created properly, are we maintaining the SLBM's technical standard? Life shows that we are not. Despite the need to improve the SLBM's there has been no work to further develop them since the mid-nineties [as published]. Over the past few years the complex of organizations and enterprises developing, testing, and manufacturing SLBM's has frequently found itself on the brink of total collapse.

The situation that has arisen with regard to the production and further development of SLBM's is the result not

only of the overall decline in production and insufficient funding, but also of the lack of well-gauged practical steps to determine both the prospects for the development of individual SNF components and priorities when it comes to the technical avenues for their improvement and development.

There is currently a tendency to understand the gravity of the emergent problems and a whole series of organizational and financial issues have been resolved. First Deputy Defense Minister Andrey Kokoshin, who has done everything in his power to remove the problems with SLBM production, has played a great role here. Needless to say, you must understand that his potential is not unlimited. Appeals were needed to Russian President Boris Yeltsin and First Vice Premier Oleg Soskovets in order for the government apparatus and the Ministry of Finance to pay attention to the problems of SLBM production.

What must be done to preserve and maintain the requisite level of the Russian SNF. First and foremost it is necessary to define a list of top-priority SNF complexes, which must include the navy's missile weapon complexes; to establish a state defense order for missiles produced by the SNF top-priority complexes, stipulating the total number thereof by the end of commissioning and the number that must be manufactured every year until production is complete; to introduce a separate section of the state budget for every named product in respect of funding of missile production by the SNF top-priority missile weapon complexes; to define the avenues of SLBM development bearing in mind existing scientific, technological, and production potential and minimal financial outlay.

The latter must be emphasized. Because all previous successes in SLBM development were only possible by means of the successful choice of avenue—the development of SLBM's with liquid-propellant rocket engines, the priorities of whose development are undeniable in Russia and remain so today. But, despite our success in developing SLBM's with liquid-propellant rocket engines, despite the steady results and inexhaustible potential, there is the view that this avenue in SLBM development is a loser compared with SLBM's with solid-propellant rocket engines. At the same time people cite the experience of U.S. specialists, completely forgetting that the route chosen by the Americans was forced upon them since they are still experiencing certain difficulties in developing reliable and effective liquid-propellant rocket engines.

An analysis of SLBM technical specifications indicates that SLBM's with liquid-propellant rocket engines not only are not inferior but are even superior to SLBM's with solid-propellant rocket engines. Particularly in terms of mass (and there is a direct connection between mass and the cost of the missiles).

To think and do otherwise means making a mistake. Regrettably, these delusions still survive today. There

has been no end to attempts to give up the acquired experience and the steady results and thus destroy the infrastructure of a sector which can continue to ensure Russia's defense capability and security with the minimum possible outlay and great effectiveness, an infrastructure that took such effort to develop.

Korzhakov Report on Rosvooruzheniye Scandal

95UM0414A Moscow MOSKOVSKIY

KOMSOMOLETS in Russian 21 Apr 95 pp 1-2

[Article by Aleksandr Minkin: "The Goats Want To Guard the Cabbage—It Is a Business They Love"]

[FBIS Translated Text] A huge scandal. In all the papers at once. Rosvooruzheniye—a monopolist in the Russian arms trade—caught in the act. Criminal proceedings instituted.

The report sent to the President of Russia by the Inter-agency Commission, listing the wildest of abuses, was covered in the greatest of detail in the press: millions of dollars that went into the pockets of dubious foreign intermediaries; secret technology made a gift (!) to foreign guests; helicopters flying off to the wrong places; tanks and APCs let go on the cheap.

An indifferent attitude from society. Rosvooruzheniye is not MMM, not Chara—they did not take any money directly from citizens. The harm to the state, as before, does not sway the people. And there was quite a bit of harm.

"...The amount of this uncontracted product totaled about five billion dollars... 192 combat helicopters and aircraft for a total of 3.2 billion dollars... 110 APCs were sent to Turkey at a price of less than 150,000 dollars... Shumeyko was asked in November of 1992 to permit the export of five machine pistols, each with two magazines, as souvenir gifts for the members of a delegation of the United Arab Emirates. Shumeyko asked the chairman of the State Customs Committee, 'I ask that the export be cleared under established procedure.' These pistols were developed at the Tula Design Bureau on order from the MVD [Ministry of Internal Affairs] to outfit the special forces. Experimental prototypes were manufactured in 1992 and have only just been tested... Two new infantry fighting vehicles with ammunition loads (six antitank missiles, 360 fragmentation tracer rounds and 900 armor-piercing tracer rounds) worth about 850,000 dollars, not counting the Russian expenses for transporting them, were transferred without charge to a Singapore firm for an indefinite period of time... Illegitimate expenses totaled more than 81 million dollars. An average of up to 70,000 dollars was transferred to the personal commercial bank cards of each staffer in addition to the wages they received for 1993 and the first half of 1994... A Commercial Importing Operations Administration exists (with 130 employees) despite a complete absence of any imports of military products..." And so one for 34 pages.

Note that all of the Russian mass media are talking about this report, signed by presidential representative Marshal Shaposhnikov and Controls Administration acting chief Zaytsev.

It is precisely this report, signed on 2 November 1994—less than a year ago—that the president forwarded to the General Procuracy. It was under this audit that acting chief Ilyushenko initiated criminal proceedings.

But there are two reports. About the second—silence.

Test Your Ingenuity

Does the West and, in particular, the United States have a vested interest in Russia's return to the international arms market? Does the United States have a vested interest in having our shameful chaos, owing to which we are losing customers, money and supersecrets, come to an end?

It would seem not. Every time we are successful in selling something to India, Iran or somebody else, brother Bill and uncle Helmut make a scene, demand that the deal be canceled, and threaten sanctions. I would risk saying that they are blackmailing us, but that would be undiplomatic.

The West is delighted when our tanks burn in Iraq or Chechnya, when our missiles do not get off the ground, when our aircraft come down. Everything that ruins the reputation of our military hardware is very advantageous to our competitors.

Can it be believed that they would do anything to save the Russian arms trade?

The Korzhakov Report

There is, aside from the report by Shaposhnikov and Zaytsev, another more secret report on the same topic. The President of Russia has read it. Let us read it as well.

Results of Evaluation of Rosvooruzheniye in 1994

To President of Russia B.N. Yeltsin

Dear Boris Nikolayevich!

The Presidential Security Service of the Russian Federation is studying and analyzing the state of affairs in the sphere of the military-technical collaboration of the Russian Federation with foreign countries, in fulfillment of Edict No. 1932-s of the President of the Russian Federation of 18 November 1993, in the area of monitoring the assurance of secrecy and observing the interests of the state and the activity of the Rosvooruzheniye state commission. In the opinion of the Security Service, many problems whose resolution requires your intervention have accumulated in this sphere.

The system of state monopoly over the export and import of military hardware has simultaneously undergone negative changes. Everyone, regardless of knowledge, experience, qualifications or job, wants to trade.

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About 12 enterprises that lobbied to obtain the right of independent trading in arms and military hardware with the government of the RF had the opportunity to do so in 1992-93 alone. The international arms markets are moreover inundated with many dozens of self-styled intermediaries.

Foreign competitors and their intelligence services make skillful use of the imperfections in our system of military-technical collaboration, the lack of coordination of the actions of Russian ministries and agencies, the ambitions and poor national awareness among some of their leaders, and a number of individuals among their closest associates. (Whose?—A.M.) The negotiations for the sale of Russian MiG-29 fighters to Malaysia have thus dragged on for more than two years now, while the Americans reached agreement and signed a contract for the delivery of their own F-18 aircraft to that country in just a year.

The signing of a contract in the amount of 90 million U.S. dollars for the delivery of ordnance to Kuwait was broken off in October 1993 as a consequence of the unsanctioned actions of the Voyentekh state company, subordinate to the RF Ministry of Defense. That same Voyentekh initiated contacts in 1992 and subsequently, making use of the services of dubious intermediary firms, participated in the sale of the latest T-80U model Russian tanks (I have already written about the disappearance of the secret tank to England in MK in 1992.—A.M.) and the unique Tunguska SAM and gun system to Great Britain. The buyer, as was later ascertained, was British military intelligence. Voyentekh that same year, through the mediation of an Austrian firm under a false end-user certificate, organized the sale of seven T-72 tanks, supposedly to Bolivia. The tanks actually ended up in Croatia. An official investigation into this matter was launched by the UN and the government of Bolivia. An international scandal is coming. Voyentekh in the fall of 1993 undertook an attempt to supply artillery weapons to Yugoslavia under a false end-user certificate. The deal was halted thanks to the timely intervention of the Foreign Intelligence Service. Despite all of this, Voyentekh continues to operate in the sphere of military-technical collaboration and, for unknown reasons, enjoys the patronage of the highest leadership of the Ministry of Defense. (It is not for nothing that there are rumors that Korzhakov has fallen out with Grachev.—A.M.)

A number of enterprises in the aviation industry, completely ignoring prevailing legislation but with the support of high patrons in the government apparatus, attempted in the spring of 1993 to sell individual prototypes of the RD-33 aviation engine, the R-739 air-to-air missile, unique process equipment and documentation to South Africa, to a country on which UN sanctions are in effect. The deal was structured according to the classic scheme of the Western intelligence services, getting models of military hardware for intelligence purposes. A story was spun for the country's high leaders of the extraordinary promise of the deal (figures of two to four billion dollars were

mentioned). The appropriate high "resolutions" were obtained, by which the prevailing expert mechanisms of the Ministry of Defense, MVS [Ministry of Foreign Affairs] and MB [Ministry of Security] were disconnected and, as a supposedly first step, individual models (corresponding to the interests of foreign intelligence services) were sold. The deal was naturally not continued. The notorious firm of Siabeko headed by B. Birshtein, enjoying high patronage with former minister of security Baranikov and first vice premier Shumeyko, also "went fishing" in the muddy waters of Russian military-technical collaboration. The MVS "Spetsvneshtekhnika" GVK special exporter, under a contrived pretext, transferred 2.5 million dollars to Switzerland to the account of Siabeko in September of 1992 at the direction of the not-known Dmitriy Yakubovskiy. This is while Spetsvneshtekhnika is a debtor to a minimum of ten defense enterprises. V. Shumeyko later wrote a resolution on the Spetsvneshtekhnika report that permitted this transfer. The documents on this illegal transaction are sitting motionless at the RF General Procuracy to this day. (I wrote about the escapades of Shumeyko in 1992, the affair with the credit for 30 billion Deutschmarks. And nothing.—A.M.)

Goskomoboronprom [State Defense Industry Committee] of Russia has also not been able to avoid temptation in the field of military-technical collaboration. Its leaders, to suit parochial departmental interests, signed an intergovernmental agreement (with China and South Korea) without the sanction of the interagency commission for military-technical collaboration (KVTS). G. Yampolskiy and M. Maley in particular, according to information from the Russian ambassador to Bangladesh, sent official confirmation by telegrams in June of 1993 of the right of the Gaz joint-stock company [AO], which in reality it did not have, to sell the BTR-80 armored personnel carrier, and thereby broke off the holding of a tender offer for the sale of those vehicles to Bangladesh at the price that was offered by the official special exporter at the Oboroneksport V/O [all-union association]. The unsanctioned action of the Gaz AO and the highly placed Russian officials were the latest blow to the prestige of Russia in the region, and caused direct economic harm.

These examples illuminate only bits of the growing uncontrollability and criminalization of arms trading. The sphere of military-technical collaboration has become a "bone of contention" in various ministries and departments, an area of the clash of group and individual interests, and the subject of enhanced attention on the part of Western competitors and intelligence services.

According to the assessments of the Security Service, Russia lacks a streamlined system for controlling military-technical collaboration subordinate to state interests, while collective responsibility serves as a specious form of irresponsibility. The Rosvooruzheniye state company, by virtue of its status as an independently

operating business entity in accordance with the prevailing legislation of the Russian Federation and generally accepted legal norms, cannot perform a series of important state functions, including the pursuit of a uniform state policy.

The creation of a body of state power under the president of the Russian Federation that would occupy a position independent of the ministries, agencies and other organizations participating in military-technical collaboration thus seems essential for the fundamental resolution of the existing problems and the assurance of strategic planning in the realm of military-technical collaboration. A Committee for Military-Technical Collaboration of the President of the Russian Federation could be such a body through your edict, in the opinion of the Security Service, with the primary tasks of devising and pursuing RF policy in the sphere of military-technical collaboration with foreign countries, the state regulation of relations that arise in that sphere, the assurance of coordinated actions of all participants in that collaboration, and the monitoring of their foreign economic activity.

Respectfully,

Service chief A. Korzhakov.

Hostile Voices

Unfortunately, we are not the first to publish this secret report. The radio station "German Wave" reported on April 7 that the Korzhakov report had been published in the magazine STERN. "German Wave" read out large portions of the report (the tanks to Croatia, the T-80 to England, and the latest automatic weapons to the Arab Emirates...).

A cycle of three programs under the name "Arms for Sale" came on Radio Liberty a few days later. Liberty staffer Mark (Deych) quoted the Shaposhnikov report **before** it was featured in the Russian press. Liberty read out the entire secret report of Korzhakov. They then put on the air an interview with Viktor Mironov, deputy chairman of the committee of the State Duma for security, who repeated after every word "I am shocked! I am completely shocked!" (perhaps he had not read MK yet, and had not heard how they were thieving). And he added that everyone was to blame for the enormous losses and the drain of military secrets—the leadership of the Ministry of Finance, foreign intelligence, the FSK [Federal Counterintelligence Service] and Presidential Security Service—"the only service that has actually been working." (Are we to understand that army generals are for sale, but security generals are incorruptible?) Mironov further added that the proposals contained in the Korzhakov report are very good...

I heard the commentary by the agitated (Deych), an agitated woman (the Korzhakov report was read by two voices), I heard the shocked deputy and, naturally, I was also agitated, shocked and mentally applauded General

Korzhakov, who had not only been trying to protect Yeltsin, not only to educate Chernomyrdin in how to trade in oil, but was also monitoring such a gigantic field as the arms trade.

But one detailed troubled me a little. I was overcome by doubts. So as to dispel these doubts, I took the Korzhakov report (without any particular trepidation, I admit, since its secrecy had already been breached by STERN and then tested by Liberty) and went to the General Procuracy. That was right during the time when acting chief Ilyushenko was gradually building up the criminal case on the Shaposhnikov report.

I went to the procurators, showed them the Korzhakov report. Comment, please, on the last paragraph.

The procurators (with great ceremony) read it over, sighed, looked around nervously and whispered, "There's nothing here to comment on. It's clear as day—it comes together itself."

My doubts were confirmed.

I showed the procurators other pieces of paper as well...

Borzhomi at 40 Kopecks or 50 Cents?

An interview appeared in MOSKOVSKIYE NOVOSTI (No. 24), the first ventured by the owner of the firm of M&S, Belgian citizen Michael Brandwine, a well-known partner of our generals in trading anything you please.

"I knew the Russian military poorly, and it was a revelation to me when I soon came to understand that personal gain overshadows everything else—the interests of the matter, the state, their own army—for them. Gifts and bribes moved to the forefront.

"The mechanism was a very simple one. The army, for example, orders an enormous quantity of bed linens, if memory does not deceive me, more than 10 million marks. They pay 15 marks for each set therein. The price is initially inflated by more than three times: the same sheets could be bought for 3—5 marks apiece...

"The official signing the contract gets a bribe, paltry compared to the losses caused to the army and the country. The deal with the sheets, for instance, is overseen by the chief of the Trade Directorate of the MO [Ministry of Defense], General Sadovnikov. Say he gets 500,000 marks in 'commissions' for this. But the army, after all, has lost millions in this deal.

"If firms offer a good at a price of one mark, the Russian military say, 'Let's buy it for 10 marks'—what businessman will refuse such an offer? I would say frankly that I was troubled and annoyed by the fact that it was not important to the Russian military how much of the good, what good or at what price they were ordering: the only thing that was important was how much would end up in their pockets.

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Men's Pants and Women's Blouses**TELEGRAM**

"R.P. Trade Directorate to Rezyapov in connection with expiration of deadline of report to RF Minister of Defense on the question of the export of surplus goods in the amount of 30 million DM. Request immediate report of results of final negotiations. Karakozov."

(Karakozov is now the deputy for rear support to Air Force Commander-in-Chief Deynekin.)

To Chairman of the Committee for Personal Goods and Services of the OVS [Combined Armed Forces] of the CIS Lieutenant-General of Aviation Comrade G.A. Karakozov:

"I am sending a copy of the letter to Minister of Defense of the Russian Federation General of the Army P.S. Grachev over the signature of First Deputy Chief of the GOU [Main Operations Directorate] of the Russian Federation and chief of the RF Presidential Security Service, Major-General A.V. Korzhakov, with resolutions regarding the additional selection of goods and their sale for rubles.

"Urgently request that you communicate your decision."

Chief of the Trade Directorate of the Western Group of Forces Colonel F. Rezyapov, 24 June 1992

(This means that somewhere there is a letter from Korzhakov with a request for additional goods and with resolutions of Grachev.—A.M.)

Committee for Personal Goods and Services of the OVS
9 July 1992, No. 168/4-3399
To Chief of the ZGV Trade Directorate Colonel F.M. Rezyapov

Preliminary clearance work is being performed for the shipment of surplus goods to Russia in the amount of 30 million DM:

- with regard to the amount of goods, increased by you to 30 million DM, submit immediately to the Committee an additional list of the goods for 10 million DM... Information is also lacking on the list of goods for 20 million DM;
- each technically complex good shall be in the firm's packaging, with a blank guarantee form attached to each item;
- all goods being shipped shall be of good quality...
- the loading into containers shall be performed by persons with material liability, who will subsequently be sent to Russia to turn over the goods to the buyers according to assortment, quantity and quality;
- the shipment of the goods shall be performed only in 20-tonne containers...

*Committee for Personal Goods and Services of the CIS OVS
Chairman Lieutenant-General of Aviation G. Karakozov*

Contract No. 3/2

City of Potsdam, 3 August 1992

SELLER: ZGV Trade Directorate in the person of...

BUYER: RF Main Security Administration in the person of...

Subject of Contract

On the basis of written instructions from the Committee for Personal Goods and Services of the CIS OVS Chairman Lieutenant-General of Aviation G. Karakozov of 17 July 1992, the SELLER has sold and the BUYER has bought goods in the amount of 1.5 million DM, in the quantity and assortment indicated in the specifications...

Prices and Terms of Payment

Settlement for the goods is made with ruble conversion at the rate of one FRG DM to 63 rubles 69 kopecks...

Specifications for the Goods Offered for Sale to the RF Main Security Administration (annex to contract No. 3/2)

Description	Quantity	Price	Total
Men's suede jackets	82	150.00	12,300
Travel bags	20	10.29	205
Pairs/men's shoes	120	29.00	34,800
Men's pants	48	14.95	717
Women's blouses	200	17.00	3,400
Aiwa televisions	40	680.00	27,200
Philips electric teapots	50	50.00	2,500
Sharp cameras	10	1470.00	14,700

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Don't Believe, Don't Fear, Don't Ask

I liked a great deal here. The mutually advantageous relationship of Grachev and Korzhakov was clarified. The existence of a "GUO [Main Security Administration] store" was somewhat amusing. The gentlemanly selection of goods was charming (all goods needed for the farm). And the amount was not bad—somewhere around 30 million DM at 63 rubles a mark. And that was only in one letter. There were so many of them, these letters. The phrase "surplus goods," however, is the most delightful of all. As if the ZGV is not a Russian army abroad, but some overstocked consumer-goods factory.

The documents reek of criminal activity. And since I was going to the General Procuracy for comment, I grabbed these papers as well.

I showed them to them. Could you explain if there is anything criminal in them? Could you, I ask, cite the articles of the Criminal Code?

The procuracy "big shots" blanched and started looking around for telephones and fresh air. "No," they said, "there will be no comment. Where did you get this?"

"Well, what questions," I say. "I found them."

"Where?"

"Someplace or other, you know where."

Here the procurators startled me: "Aren't you afraid?" they asked.

"Of you? Are you going to arrest me?"

"No, not us. Why be afraid of us? But those..."

"Who?"

"Well, those... you understand... Those forces..."

The procurators were afraid even to whisper by name that evil force, but for better understanding they pointed up with their finger, having in mind either their acting chief or someone even higher.

They asked me very much not to print it.

First of all, the people are afraid of will decide that they gave this to me at the General Procuracy.

That can be understood. When the minutes of the inquiries from the Mercedes criminal case appeared, it was the journalist and not Grachev who ended up in court. There was a terrible thrashing with official reprimands for the procurators. Now they were gripped with the fear that the leadership would again decide that... They would not be forgiven.

Second, they say, you will destroy the case in your publication. They wrote about the Mercedes and the case was closed. Print this, and this case will be closed. The papers you have are nothing, a trifle. But boy, do we have some!

This means that there are criminal proceedings with Korzhakov, Barsukov and their store. Sitting at the General Procuracy. The General Procuracy will burn down, I feel it in my heart. These papers will undergo spontaneous combustion cleaner than the military warehouses.

"Show me."

"What, you?! Are you crazy?!"

"No, I am not. But very interested."

They did not show me. They convinced me not to print them.

I gloomily left the procuracy. I had learned nothing new; on the contrary it looked like I could not print what I did know. I would ruin the case.

But why? Is there really a law that if something leaks to the press, a case has to be closed? Boris Nikolayevich, please intervene. Order the reopening of the case of Grachev's Mercedes. We wanted to help the court proceedings, but look, in fact we hindered them.

I decided not to print. Then I got thinking about it.

The procurators have their jobs, and I have mine. It does not matter that their acting chief will not let them do anything. They will grease the thieves the way they greased Stankevich. They will let obstinate procurators go, like they let Ponomarev go.

If the case of abuses in the army has dragged on since 1992, if the case of the surplus goods has dragged on since 1992—where is the hope that it will get to court? The cases are not concluded, but now here are new ones—Kholodov, Listyev, Rosvooruzheniye.

More and more crimes, and fewer and fewer investigators. Such a comfortable ratio for the thieves makes thievery safer and safer. Even if you end up getting caught, helping hands are extended to you in the investigation...

And they say to us, do not dare call anyone a criminal before a court verdict. How long do we have to wait?

And most important—does society really have a vested interest in seeing that Korzhakov sits in prison in the 21st century? No. Society has a vested interest that he not crush under himself the entire arms trade of Russia today. He has enough (business) already. Perhaps he will be able to handle it. He has been training with "men's pants."

Return for a second to the section "Check Your Ingenuity." If you take into account that the United States has a very large vested interest that the criminal chaos in our arms trade continue, if you take into account that Radio Liberty is an American radio station financed from the U.S. budget, then how is one to understand that Liberty praises Korzhakov for three half-hour programs in a row,

helping him to make off with this strategically important, multi-billion-dollar sphere? And how is one to understand that the Korzhakov report turns up in STERN? And then, an outburst of publications and the criminal case against Rosvooruzheniye. Quite a set of coincidences here...

And what eternal shame for the procurators who looked at the papers, changed countenance and asked, "Aren't you afraid?"

"What about you?"

Battle To Privatize Strategic Missile Defense Developer

954E0874A Moscow TRUD in Russian 18 Apr 95 p 2

Article by Fedor Yemchenko: "Swoop Down and Buy—But Not To Privatize, for Example, the Kantemirovskiy Division?"

[FBIS Translated Text] The collective of the Radio Instrument Building Scientific Research Institute (NIIRP) has been struggling with apologists of privatizing in the Russian way for over a year now. It is still hard to predict the final result. The point is that two, as it has turned out, approximately equal forces have clashed over the unique property: on the one hand—those defending the interest not only of the collective, but also of the state, as well as the Russian Federation Law, and on the other hand—a group of high-ranking, influential officials

According to procedure, however, the Radio Instrument Building NII is the main developer of the Russian scientific-experimental program, Planet, aimed at creating promising systems of guaranteed protection against missile and air attack. This institute, in cooperation with other enterprises, developed a system of A-35 PRO (antiballistic-missile defense), deployed around Moscow. A system of second generation antiballistic-missile defense (A-135) has now been accepted for operation. It, as specialists claim, is the most modern of the presently existing strategic antiballistic-missile systems. It ensures the interception ("close" and "long-distance") of the enemy's warheads and their destruction, with the aid of nuclear atmospheric explosions.

Even this information, it seems, is enough to make one realize that only people for whom the country's security and its intellectual capital is a matter of no importance could take it into their head to privatize an institution like this.

Nevertheless... In 1992, during the reform of the administrative structures of the former main administration or, as it was called, the Vypel Central Scientific-Production Association, it was decided to transform Vypel into an interstate joint-stock corporation (MAK), and N. Mikhaylov, general director of the TsNPO [Central Scientific-Production Association] became its president. The corporation was to have

combined enterprises of Ukraine, Belarus and Russia. On the instructions of A. Ivanenko, deputy chairman of RF Goskomimushchestvo, NIIRP was transferred to MAK as part of the charter capital on the Russian side. At that time N. Mikhaylov convinced everyone that this was done to maintain and develop the top scientific-intensive technology of antiballistic-missile defense.

Time, however, showed the opposite. Ukraine refused to enter the corporation, and Belarus had only an eight-percent share in the charter capital. In 1993, the Russian government issued a decree on privatizing NIIRP. Again in the guise of the same "sausage": allegedly to maintain PRO technology in Russia. V. Polevanov, the former chairman of the GKI [State Property Committee], saw this privatization as an encroachment on the interests of the state, and promised to get the institute out of the corporation. He did not succeed, however. He was transferred to a different job. The State Institute was turned into a joint-stock company of the open type.

The work collective's council appealed to the Procurator-General about this. But since the evaluation of government decrees is not within the jurisdiction of the procurator's office, V. Davydov, Procurator-General, wrote a letter to Vice-Premier O. Soskovets.

"The Statute on including the NII in the corporation," the procurator informed him, "was passed in violation of articles 13 and 33 of the RF Law 'On Enterprises and Entrepreneurial Activity.' The NIIRP, according to the Charter, was registered by the Registration Office on 20 February 1992, and was at that time an independent state enterprise with property under its full economic authority, and consequently, in accordance with the law and Edict of the president, it would require the agreement of the work collective to decide on its entering the corporation."

This resolution, let us explain, was passed by an assembly of the board of directors, the trade union committee, the scientific-technical council and the chairmen of the trade organizations of the structural subdivisions. The question of privatizing NIIRP as part of the corporation was examined for the first time at a conference of the institute's work collective on 23 June 1993. The results of the voting made it impossible to pass this resolution. The organizers of the conference, however, worked on manipulating things. Information that the collective had allegedly agreed went to the legislative bodies.

Ignorance of the procedure put many people in a bad spot: the necessary majority—is not just "plus one vote." The people, therefore, probably knowing where this "privatization" would lead, appealed to the collective and explained to it "what was at the bottom of it." The next day, the work collective conference elected a council, which was entrusted with clearing up all the legal fine points of this collision.

In January of last year, on the initiative of the STK [work collective's council], the collective again assembled at a

conference and passed a resolution to consider the documents on privatization as not subject to execution, since they contradicted RF legislation. After the conference, it was decided to appeal to the Higher Arbitration Court, which expressed the unanimous opinion—right was on the side of the work collective.

The government was in no hurry to put this mistake right, however. Moreover, Anatoliy Chubays wrote a statement on introducing a protest against the VAS [Higher Arbitration Court] resolution. In his opinion, it was not the government, but the court that had made the mistake.

While the collective's argument with the privatizers was going on, the institute fell apart completely. Orders from the Ministry of Defense were cut back 10-fold. For four or five months the people received no wages. V. Save-lyev, director of NIIRP was relieved by MAK Vympel of the position he occupied, "because of his state of health." B. Vinogradov was named acting director. Daughter enterprises and partnerships with limited liability were created out of the structural subdivisions....

It is possible the readers will ask the question: just what is it that so attracts privatizers to this institute? Of course, the property. The Institute has 60 hectares of land, about 20 buildings and structures (and what buildings and structures!), developed engineering networks and infrastructure. All this is assessed at 500 million rubles [R]. How could you resist not "privatizing" all this for a song!

The other day, employees from the Institute—Leonid Yefimov, chairman of the STK, and Vitaliy Zharkovskiy—dropped in at the editorial office.

"Well, how goes it?" I asked.

"Look here," they showed me a paper. "The Moscow Arbitration Court passed a resolution 'to recognize as invalid the act of registering the AOOT NII Radio Instrument Building (certificate of 21 June 1994, registration N 008629)'"

"Does this mean I can congratulate you?"

"Don't be in any hurry, our opponents will not give in so easily. This is too tasty a morsel for them."

The dispute between the labor collective of NIIRP and the boards of directors of MAK Vympel and AOOT NIIRP must not be regarded only as a struggle for possession of the property. Today it is already acquiring another shade of meaning. In April, as we know, an International Conference on Extending the Force of the Agreement on Nonproliferation of Nuclear Weapons will be held. It is difficult to say right now the scenario the negotiations will take. In any case, right now the world is not so stable that Russia can forget about its security. It appears, however, someone wants very much to turn NIIRP into a joint-stock company of the open type. Swoop down, buy shares and dictate how best to

protect Russia's interests. In this way one can, really easily, take up the armament well known from history: "Our land is great and abundant, but there is no order in it. Come and possess us!"

Nemtsov on Creation of Territorial Production Zones

95P50107A Moscow ROSSIYSKIYE VESTI in Russian
21 Apr 95 p 3

[Article by ROSSIYSKIYE VESTI correspondent Valeri Orlov: "The Plant Became a 'Free' Zone"]

[FBIS Translated Text] A fundamentally new economic form has been born and is being tested on the territory of Nizhegorod Oblast. Based on the industry of the defense sector here they have created a territorial production zone of open-type joint stock societies—the G.I. Petrovskiy plant, the Sormovskiy "Lazur" plant and the "Salyut" NPP [scientific-production enterprise]. Oblast governor Boris Nemtsov comments on this event.

The creation of territorial production zones on the basis of these former defense plants is a part of the conversion program, or more precisely, the survival of Nizhegorod Oblast's military-industrial complex. Up to now the so-called conversion fund has been in existence for several years.

The new stage at this time has no analog in the country. Its primary goal is to preserve the technological and intellectual potential of the enterprises. The second goal is to create new work places, or at least not to lose the existing ones. And the third goal is to continue the development of high-tech industry on the basis of these enterprises.

Life in the city is not simple. They are constantly delaying wage payments at tens of plants. Thus it turns out that there are more than 40,000 people without means of existence. And the majority of them work in the VPK [military-industrial complex]. That is namely why the creation of territorial-industrial zones began at the defense enterprises.

How is this idea carried out in practice? According to a decision of the RF government, all the enterprises on the territory of the three transferred plants are freed from paying federal taxes for five years. The legislative assembly of Nizhegorod Oblast and the city Duma freed them from local taxes. And finally, the Russian customs committee adopted a decision to put into practice a so-called customs free warehouse regime. Thus, equipment, manufactured parts and documents arriving on the territory of these warehouses from abroad (if, of course, they are used for production purposes and not for resale) are not subject to any import duties or value-added taxes. In other words, at the largest Nizhegorod enterprises, the G.I. Petrovskiy plant, the Sormovskiy "Lazur" plant and the "Salyut" NPP, unique off-shore zones are being created.

In fact, we are trying to work out a new model of privatization. As you know, up to now the idea of

breaking up enterprises had a basically surgical character. Efficient production was singled out so that nothing would hinder its further growth while inefficient ones were allowed to die. But thousands of people work at these...

We are relying on outside potential, which will come to these tax-free zones and create the most advantageous production for today. All areas on these territories will be leased and a privileged regime for buying property will be established in those cases where the conditions for competition are fulfilled. For example, you promise to build a plant here for assembling automobiles. You bring in equipment, you start to produce automobiles. Everything is in order: You pay the workers, you create new work places, you pay rent. And after five years these premises become your property - for the residual cost.

But if your management results only in losses, then the lease agreement is dissolved and we look for other entrepreneurs. It is true, unfortunately, that such an approach to privatization is not characteristic for our country. All of privatization was based on some kind of promises, which more and more often are not kept. As a result, a plant for whose development, let's say, 10 million dollars was promised, continues to drag out a miserable existence. There are very many similar examples. In order that this not happen, we proposed our own model of privatization.

The success of the experiment depends a great deal on how the management of the territorial production zones will be structured. There is the purely state management model, where bureaucrats direct everything, and there is the private model. In this case, leadership is handled by commercial structures, who make money only when the existing production is profitable. After long debates, we and the enterprises' leadership concluded that for us it is more acceptable when a private structure manages the zone. It is not important whether this is a bank, a juridical or a physical person. In any case, a private manager is concerned that every square meter of the zone works and produces profits, ensuring income for the management as well.

But here control over these managers will be implemented by a state organ—a coordinating council headed by oblast vice-governor Vasilii Shchupyro. It is namely the coordinating council which determines the rules of the game—lease prices, mutual relations between the workers and management, control over production and so forth.

Management is chosen by competition, as are those who want to work on the territory of these zones. If we choose talented managers and work out a reasonable plan for their material interest we will find really worthy candidates to work here. And I assure you, we will be able to create a model of an original industrial ant colony. And it will become a starting point for the further development of the oblast's industry.

'Mars' Firm To Produce German PC's Under License

95UM0412A Moscow KRASNAYA ZVEZDA in Russian
22 Apr 95 p 4

[Article by Valentin Rafalskiy: "'Mars' Problems Urgent"; First two paragraphs are editor's lead.]

[FBIS Translated Text]

Enterprises of the defense complex, which until recently were flourishing, are today experiencing enormous difficulties as they try to survive under the new conditions, to retain their specialists, and to acquire a sound economic footing for their existence. A fond dream and goal for many of them, after having survived a decisive and ruinous collapse, is to ensure a stable growth of the economy, even if a small one, in the near future.

This goal is particularly difficult for numerous scientific research institutes [NI] and design bureaus [KB] which, because of the specifics of their purpose, do not have a developed production base suitable for manufacture of consumer goods. Virtually cast to the whims of fate, and for several months not having received the funds to pay the wages of their associations, these enterprises at present are desperately trying to find a worthy solution to their problem. And many find it.

The State Scientific-Production Association [GNPO] "Mars," which is located in the city of Ulyanovsk, has developed a special program for emergence from the crisis and begun its implementation by assimilating serial production of personal electronic computers under license from the Siemens Nixdorf (Germany) company. The first lots of computers have already found their buyers.

The computer production has been certified by the company and its head enterprise, Business Unit Personal Computer. And the computers themselves have all the necessary certificates in accordance with the regulations in effect on the territory of Russia.

What sort of personal computers does the 'Mars' GNPO produce? First of all they are powerful, based on the Intel 80486 processor. These are systems for economists and for office work; reliable servers and stations for local computer networks of any level of complexity; data and reference system for various purposes; communications systems; and multimedia systems.

Successful selection of base configurations for serial production, in combination with capabilities for expansion of the functional properties of the computers, allows 'Mars' to maximally satisfy consumer demands including special ones, which is extremely important if one considers the wide-scale computerization of state administrative structures.

The users have no need to search for additional components and to resolve the problems of installing them in the computer—everything needed is installed at the

plant in accordance with the specifications, with the "insides" tested jointly with the machine. In accordance with the selected configuration, we install the necessary operating system and the Windows graphical interface.

It is an important fact that the personal computers series PC-4H, PC-5H are produced in the very heart of Russia. The proximity of practically all regions to Ulyanovsk makes it possible to efficiently resolve problems of repair, technical servicing, and training.

Finally, I would like to mention in particular the quality of the computers produced at 'Mars.' This is an object of special attention. For that reason, all the production and technological equipment of the assembly plant was certified at the very start of our activity by Siemens Nixdorf, and the operations of assembly and testing are done by qualified specialists who have received the corresponding admittance to work at plants of the Siemens concern. All the components go to assembly only after careful testing. In terms of quality, they meet the requirements of European standards.

As we see it, the invitation from representatives of the Novell company to participate in fitting its exhibit at the "Comtek 95" Exhibition with computers of the 'Mars' GNPO is a confirmation of the high quality of the personal computers we produce.

Specialists of our scientific-production association are confident in the correctness of the conversion strategy adopted at the enterprise. For this reason they see their main tasks as comprehensive development of production, and creation of data and communications systems and complexes for the most diverse fields of application based on the computers produced.

FOREIGN MILITARY AFFAIRS

U.S. Imaging Reconnaissance Space Systems

95UM0350D Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 1995 (signed to press 14 Feb 95) pp.39-43

[Part One of article by Lieutenant Colonel A. Andronov and Senior Lieutenant R. Shevrov]

[EBIS Translated Text] The work of creating space imaging reconnaissance systems began in the United States in the late 1950's. It was carried on by the Air Force and CIA within the scope of the WS-117L program under three interrelated projects—Corona, Sentry, and Midas. Best results were achieved in the course of research under the Corona program, in which the functioning of photoreconnaissance gear as well as the return to Earth of capsules of film taken in orbit were being worked out in the Discovery experimental satellites.

The first photographs of USSR territory from outer space were obtained in August 1960. They were needed by U.S. specialists to evaluate work on the Soviet missile program in connection with the forced termination of

U-2 high-altitude reconnaissance flights in May 1960. Capsules produced by General Electric (size 0.7x0.8 m, weight around 90 kg) were used to return the film; they would be released from the spacecraft and after deceleration would descend by parachute in a designated area of the Pacific. Despite some failures (for example, because of bugs, one capsule fell in a Soviet area of the Arctic), the Corona project marked the beginning of operational space photoreconnaissance systems, which were used until the mid-1980's.

Under the second project, Sentry, imaging reconnaissance equipment was being developed which permitted transmitting collected data to Earth over a radio channel. The possibility of photographing the films developed aboard the spacecraft (by analogy with Polaroid cameras) and also photographing the Earth's surface directly using onboard television systems was considered. With its high promptness of data transmission (within several hours), this equipment had low resolution compared with the capsule photosystems. According to experts, the first photographs transmitted from aboard experimental Samos satellites were of such low quality that they were unable to be tied to specific geographic areas. After modifications, this equipment began to be used for surveillance imaging reconnaissance. According to U.S. press reports, Soviet nuclear-powered missile submarines under construction and SS-7 and SS-8 ICBM silo launchers were discovered from the Samos satellites.

The accumulated scientific-technical achievements obtained as a result of realizing the Sentry project permitted NASA to perform a remote survey of the Moon's surface during 1966-1968 using the Lunar Orbiter spacecraft to select sites of future landings of the Apollo series of spacecraft. The satellite's main equipment, weighing a total of 66 kg, included a camera with two lenses and equipment for developing film (Eastman Kodak) and line-by-line transmission of images over a radio channel (CBS Laboratories and Philco-Ford). In the assessments of U.S. specialists, using a lens with a focal length to 1 m in such a camera would permit Samos satellites to obtain images of ground objects with a resolution around 2 m.

Realization of the Midas project, which envisaged the development of a spacecraft for detecting thermal emission of ICBM exhaust flares, led to creation of the IMFWS ballistic missile launch detection system in the late 1960's.

The National Reconnaissance Office (NRO), which included representatives of the U.S. CIA, Air Force and Navy, was organized in August 1960 to coordinate efforts of various departments in the space reconnaissance area, and the National Photo Interpretation Center (NPIC) was formed in a Washington suburb in 1961.

The imaging reconnaissance systems were upgraded along the following directions: increasing the reliability, resolution and time period of active functioning of satellites, and optimizing the parameters of operational orbits.

All U.S. imaging reconnaissance satellites since the 1970's have been launched from the Western Test Range (Vandenberg Air Force Base, California) into polar, Sun-synchronous orbits, which supports observation of sectors of the Earth at one and the same local time. As a rule, so-called "morning" orbits are used, which permit observing the Earth's surface in the descending part of the orbit in the morning (from 0900 to 1100 hours local time). An increase in the time period of active functioning of satellites from several weeks to several months by the mid-1970's led to a reduction in the annual number of spacecraft launches from 6 to 1, and from 1977 on enabled maintaining a minimum of one imaging reconnaissance satellite constantly in orbit.

Experience in operating the first photoreconnaissance systems led to the need to divide up the functions of close-look and area surveillance reconnaissance. Area surveillance systems with a wide swath of coverage (100-400 km) were used to examine vast sectors of terrain to search for necessary targets, which subsequently were subjected to detailed photography with a small viewed swath (10-20 km), but with high resolution.

The KH-8 (U.S. imaging reconnaissance satellites are called Keyhole) is the most sophisticated U.S. close-look photoreconnaissance satellite. These spacecraft, known also as Gambit or Samos-M, were operated during 1966-1984 and became the most widespread U.S. imaging reconnaissance satellites (around 50 were launched into orbit). The KH-8, developed by Lockheed based on an Agena stage with multirestartable propulsion, was intended for high-resolution photography of strategic targets (to 0.2 m—the best indicator achieved by U.S. close-look reconnaissance satellites).

High resolution was achieved by installing a long-focus optical system in the satellite and reducing the perigee to 120 km. Maneuvers for correcting orbital parameters were conducted each day to compensate for a decrease in altitude because of the satellite's deceleration in upper layers of the atmosphere and to keep the perigee phase of the orbit over the northern hemisphere. Because of large fuel consumption, the time period of the satellite's orbital functioning was around 10 days in the 1960's, but later the duration of operation was increased to 125 days as a result of modernization of the satellite's onboard systems. The last KH-8 models, launched in the 1980's, were intended for developing future imaging reconnaissance equipment (particularly systems for transmitting images over a radio channel) within the scope of the FROG (Film Read-Out Gambit) program.

According to U.S. press data, the primary missions of these satellites in the 1970's were to search for silo launchers of new Soviet ICBM's, to observe strategic ABM and space defense bases and complexes, and to monitor the progress of combat operations between Iraq and Iran and in Afghanistan. In 1984 a KH-8 satellite (international number 84 391) was actively used to survey the area of combat operations being conducted between Soviet troops

and Afghan opposition detachments in the Panjshir River valley. According to press reports, space reconnaissance results were transmitted to the Afghan fighters so they could avoid attacks by Soviet troops. In the 1980's Pentagon specialists provided Iraq with satellite photographs of the territory of Iran, which permitted planning missile and air strikes against enemy targets.

Preliminary targeting data received from KH-7 (from 1966 through 1972) and KH-9 (from 1971 through 1984) area surveillance photoreconnaissance satellites were used to target KH-8 close-look reconnaissance satellites. Based on a large-format optical system developed by ITEK for the KH-7, a large-format camera [LFC] subsequently was created and in 1984 was installed in the cargo bay of the Space Shuttle and used for cartographic survey of terrain (Fig. 1). It weighed 430 kg, was 1.3x0.7x0.9 m in size, the lens focal length was 30.5 cm, film format 23x46 cm, and camera resolution 90 lines/mm. With an orbital altitude of 180 km (typical perigee of the KH-7), the size of a frame on the terrain is 270x136 km and resolution is less than 10 m. The LFC permits obtaining color and black-and-white photographs and also forming stereoscopic pairs with an accuracy to 9 m in determining terrain relief height. The U.S. Defense Mapping Agency uses the stereo pairs for developing digital terrain relief maps used in cruise missile guidance systems.

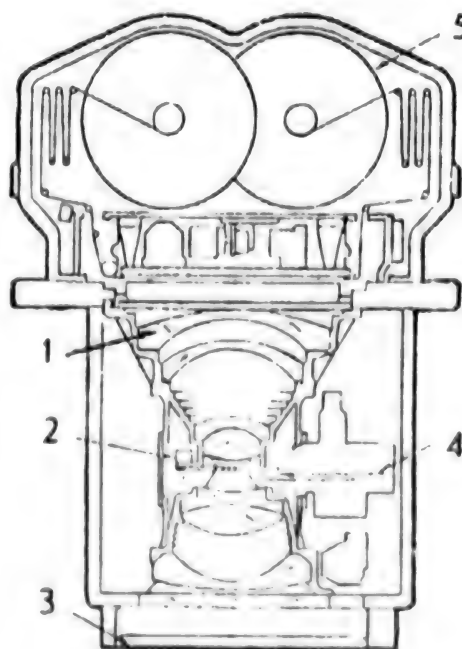


Fig. 1. External view and configuration diagram of LFC large-format camera

- | | |
|-------------------|--------------------------------|
| Key: | 3. Heat-shielding cover and |
| 1. Lens | heat-shielding housing of lens |
| 2. Filter changer | 4. Shutter |
| | 5. Film advance device |

During 1966-1971 Lockheed developed the KH-9 satellite (LASP) based on an Agena base stage; the KH-9 was intended for integrated performance of area surveillance and close-look imaging reconnaissance missions. The satellite's onboard equipment included two types of optical systems: a Perkin-Elmer long-focus close-look photoreconnaissance camera (weight 8.1 t) and an Eastman Kodak area-surveillance photoreconnaissance camera.

There were 4-6 capsules aboard a spacecraft for returning exposed film to Earth. It is presumed that close-look surveillance data also could be transmitted over a radio channel via an onboard antenna 6 m in diameter.

In the course of upgrading onboard equipment, a large-format camera was additionally installed aboard the LASP-5 satellite in 1973 for a cartographic survey of terrain with high accuracy in determining target coordinates in support of the U.S. Defense Mapping Agency. Reports appeared in 1977 about placement of ELINT collection equipment on the LASP-13 satellite. The KH-9 satellite launch program concluded in 1986 after an unsuccessful attempt to insert the last, 20th, model into orbit. Because of a less intensive (three-day) cycle of making corrections, the duration of their functioning—in the early 1970's only 40-50 days—reached 275 days by 1984.

As reported in the western press, primary targets of KH-9 spacecraft reconnaissance continued to be Soviet strategic targets and ranges. One satellite (KH-9 N 18) was used in 1983 during a search for the construction area of a new radar near Krasnoyarsk for detecting ICBM launches (it was found only 18 months after the beginning of construction) and for cartographic survey of the territory of the European USSR. Flight missions for U.S. cruise missiles stationed in Western Europe were developed based on the data collected.

Poor promptness of data delivery (2-5 days) was considered the chief shortcoming of close-look photoreconnaissance systems, which became obvious in conducting reconnaissance during the 1967 six-day Arab-Israeli war, when all data collected by the Americans were only of "historical interest" and could not be used for evaluating development of the conflict. Requirements were developed in 1967 for new electro-optical reconnaissance satellites, which permitted obtaining high resolution photographs of targets and transmitting them to ground points in near-real time. The firm of Thomson-Ramo-Wooldridge was chosen as prime developer of such a satellite (KH-11).

According to the requirements, the electro-optical reconnaissance satellite system was supposed to provide daily surveillance of any sector of the Earth's surface, obtain images of objects with very high resolution and transmit them to a processing center with minimal time delay. Its makeup included two KH-11 spacecraft, an SDS (Satellite Data System) relay satellite subsystem, and a control and data reception center at Fort Belvoir, Virginia (Fig. 2).

High resolution (around 15 cm) from an altitude of 270 km was achieved thanks to installation of a long-focus

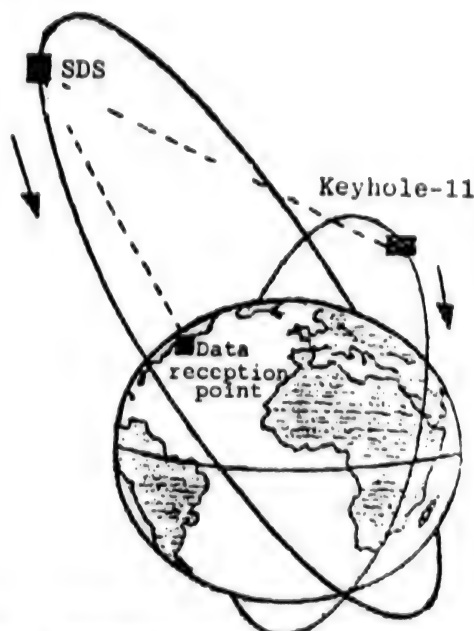


Fig. 2. Diagram of organization of control and data transmission in the electro-optical reconnaissance system based on the KH-11 satellite

optical telescope and charge-coupled device [CCD] photodetector aboard the KH-11. The so-called CCD-matrices were created in the late 1960's by Bell Telephone Laboratories and, with relatively small dimensions, had several tens of thousands of detectors (as a comparison, the modern CCD-matrix installed aboard the NASA Hubble space telescope has 640,000 elements, each 15x15 microns in size). The KH-11 spacecraft optical system is built in a two-mirror Cassegrain scheme: the primary mirror is 2.3 m in diameter and the secondary mirror is over 0.3 m (the Hubble telescope optical system with similar characteristics has an effective focal distance of 57.6 m).

High timeliness is achieved by transmitting images of objects over a radio channel in the centimeter radio waveband via relay satellites. To ensure continuous radio contact between the control center and reconnaissance satellites flying over the northern hemisphere, SDS spacecraft are inserted into Molniya type inclined, oblong 12-hour orbits (inclination 64°, orbital altitude at apogee and perigee 39,000 and 600 km respectively). The makeup of the relay subsystem includes a minimum of three SDS satellites whose orbital planes are spaced 120° relative to each other. They move along one track, hovering in turn in operating apogee sectors positioned over the Atlantic and Pacific oceans.

An increase in the operating period of KH-11 satellites compared with photoreconnaissance satellites managed to be achieved thanks to the use of higher orbits and less frequent corrections. Comparative data for orbital correction cycles of the KH-8, KH-9 and KH-11 spacecraft

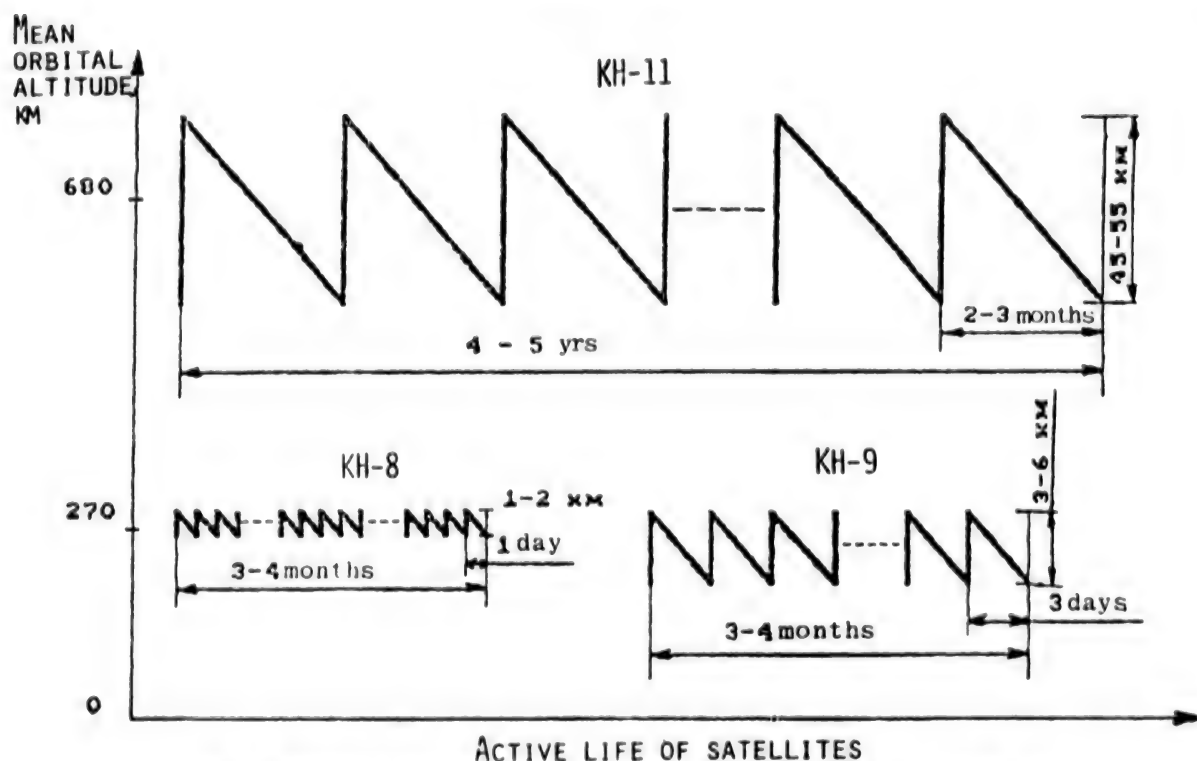


Fig. 3. Comparative data on correction cycles of KH-8, KH-9 and KH-11 satellites

are shown in Fig. 3. The electro-optical reconnaissance satellite system uses two kinds of corrections: to maintain average altitude and to phase the tracks of two spacecraft (to preclude the possibility of unobserved zones appearing). In contrast to photoreconnaissance satellites, electro-optical reconnaissance satellite maneuvers to maintain perigee sectors of orbits over the northern hemisphere are not performed.

KH-11's are inserted into Sun-synchronous orbits whose planes form a $48-52^\circ$ angle and are positioned symmetrically relative to the direction to the Sun. With that ballistic configuration of the system, one satellite conducts surveillance of objects on the Earth's surface on descending revolutions from 1000 to 1100 hours local time ("morning" satellite, one plane), and a second one from 1300 to 1400 hours ("afternoon," another plane). This circumstance improves conditions for image interpretation, since the shadow is on different sides in photographs of one and the same object made by two satellites. Further ground digital processing of imagery permits improving their contrast, eliminating the effect of haze and in some cases even picking out objects located in the shadow of buildings. KH-11 onboard equipment can function in three modes: frame-by-frame photography of small sectors of the Earth's surface with maximum resolution to 0.15 m, continuous photography (in the form of a continuous swath), and area terrain photography (resolution around 1 m).

The electro-optical reconnaissance system, deployed at full strength during 1976-1980, was used up to the mid-1980's along with photoreconnaissance systems basically for conducting military-technical reconnaissance in support of the Air Force and CIA, particularly for determining certain characteristics of new models of Soviet military equipment. According to foreign press data, photographs of the new Tu-160 strategic bomber, the Buran reusable spacecraft (it was even possible to distinguish its name written on the side), the air-capable ship Admiral Flota N. A. Kuznetsov and other military objects managed to be obtained for the first time with the help of the KH-11. Photographs from the KH-11 were used actively for planning the operation to liberate American hostages in Iran in 1980 (after its failure the Iranian side captured and published several secret photographs). Photographs of a Soviet aircraft carrier being built at a yard in Nikolayev (Fig. 4 [figure not reproduced]) made from aboard the KH-11 (resolution 0.3 m) were published in 1984 in the journal JANE'S DEFENCE WEEKLY, for which an associate of one of the U.S. intelligence services who gave them to the British journal was sentenced to prison. According to a number of U.S. experts, photographs of the most important objects were presented personally to the U.S. president 40-50 minutes after a satellite overflow the surveillance area.

The onboard stabilization and orientation subsystem of the KH-11 spacecraft is designed for tracking targets with high angular velocity of movement. This feature

permits using this type of satellite for photographing other satellites in space. According to press reports, in 1982 KH-11-4 was used to photograph the Columbia orbiter stage to assess the condition of the ship's thermal coating before it landed.

The main factors constraining use of such satellites are the weather situation in the reconnaissance area and illumination conditions. In this connection, the operation of satellites is planned after a preliminary estimate made at the U.S. Air Force Weather Center at Offutt Air Force Base (Nebraska) of weather reconnaissance data on the condition of the cloud cover transmitted from aboard Block-5D2 satellites of the DMSP (Defense Meteorological Satellite Program) military system.

The chief shortcomings of the first KH-11 satellites were the limited capabilities for photographing vast areas, relatively low characteristics of power and optical sub-systems, and relatively low overall capacity. After modernization of the KH-11, U.S. specialists gave up further operation of photoreconnaissance satellites in 1984.

The first improved KH-11-6 spacecraft (also known by the name Improved Crystal), inserted into orbit in 1984, was the most "long-lived" U.S. imaging reconnaissance satellite. The period of its active functioning considerably exceeded the design period and was over nine years. After a series of maneuvers, the altitude of its orbital apogee exceeded 1,000 km for the first time and became the standard for all subsequent satellites of this type. It allows these spacecraft to perform imaging reconnaissance missions previously assigned to photoreconnaissance spacecraft having a broad swath of coverage (when operating in a close-look photography mode from an altitude of 1,000 km, the size of a frame on the terrain is 10-15 km and resolution is 0.6-1.5 m, which is comparable with corresponding characteristics of close-look photoreconnaissance satellites).

The main distinction of the improved KH-11 is the presence of the new ICMS (Improved Crystal Matrix System) wide-format cartographic camera, which permits determining the coordinates of objects with high resolution (previously these tasks were performed using a camera installed in the KH-9). In addition, the new spacecraft are equipped with more advanced power supply, data transmission and orbital maneuvering sub-systems, because of which their capacity (number of photographs in 24 hours), endurance and duration of operation increased. The weight of the satellite increased by 1.5 t (to 14 t) and active life from 2 to 5 years.

In the period from 1984 through 1992 four improved KH-11 spacecraft (NN 6-9) were inserted into orbit. Because of unsuccessful launches of other U.S. reconnaissance satellites in 1985 and 1986, the first one was the only satellite of the system for almost two years, and only after the launch of KH-11-7 (1987) did the system manage to be restored to full strength. In 1988 the place of KH-11-6 was taken by a new satellite, KH-11-8, but for the first time the old spacecraft was placed in reserve

(until November 1994) and not deorbited as usual. The most sophisticated satellite (N 9), launched in 1992, replaced KH-11-7, which had ceased its existence. At the present time two operational satellites (NN 8 and 9) are being operated in the system.

Progress achieved in the 1980's in the area of creating multielement CCD-matrices permits bringing the resolution of the KH-11 spacecraft's onboard telescope to the theoretically possible result of 7-10 cm and also installing improved infrared photography equipment aboard it. According to compilations cited in one journal, the resolution of a hypothetical reconnaissance spacecraft with an optical system similar to the Hubble telescope (created by firms which developed imaging reconnaissance satellites) was around 7 cm from an altitude of 275 km.

(To Be Concluded)

Footnotes

1. For more details on this, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 12, 1994, pp 34-40—Ed.

Examination of New U.S. Naval Strategy

95UM0353H Moscow MORSKOY SBORNIK
in Russian No 2, Feb 1995 pp 77-81

[Article by Captain 2nd Rank S. Sysoyev under rubric "In Foreign Navies": "On New U.S. Naval Strategy"]

[FBIS Translated Text] In September 1992 the U.S. Navy Department published the document "...From the Sea." This document received the name "U.S. Navy and Marine Corps White Book," since according to the unanimous opinion of the authors of a large number of articles which appeared in the U.S. press during 1992-1994, it served as a kind of reference point for developing new strategy for these branches of the U.S. Armed Forces after cessation of the "cold war." Changes in the makeup of forces and in the infrastructure of naval forces were made simultaneously with this for creating staffs of corresponding command elements that were more coordinated, consolidated and oriented on the performance of specific missions.

In October 1993 the U.S. Chief of Naval Operations reorganized his staff to ensure greater coordination of its actions with the JCS and staffs of other command elements. In the Navy leadership's assessment, along with the appointment of a Marine general to the post of chief of the Expeditionary Warfare Directorate, these changes simplified the planning and "programming" of Navy and Marine operations and should improve their coordination.

Somewhat earlier, in March, a specially established Naval Doctrine Command officially began developing new naval strategy. Its main idea was to establish a fleet capable of supporting U.S. Armed Forces involvement

in two major conflicts simultaneously in different areas of the world. And then as a result, on 19 September 1994 U.S. Secretary of the Navy J. Dalton, Chief of Naval Operations Admiral J. Boorda and Marine Corps Commandant General C. Mundy, Jr. signed the document "Forward... From the Sea." It updated and expanded strategic concepts formulated in the 1992 document and spelled out the contribution of naval expeditionary forces to peacetime operations and in reaction to crises and regional conflicts. According to a statement by Admiral L. Smith, Deputy Chief of Naval Operations for Plans, Policy, and Operations: "The U.S. Navy changed priorities by giving a higher place to joint operations carried out from the sea and moving combat operations on the high seas to the background."

The following should be singled out as the main directions for revising provisions of naval strategy previously in effect.

- analysis and concretization of missions which Navy and Marine forces are capable of accomplishing in distant regions;
- specific determination of their role with emphasis on its growth in performance of these missions, especially in conducting joint operations in maritime-coastal areas;
- specific determination of missions for forward Navy and Marine groupings during joint deployment with components of other Armed Services and their place in preventing crisis situations and in peacekeeping operations;
- examination of missions and capabilities of the Navy and Marines for a forward presence on a global and regional scale.

Thus, the U.S. Navy command was striving to bring provisions of the existing concept of organizational development and combat employment of Navy and Marine forces into line with developing views on prospects for organizational development of the U.S. Armed Forces as a whole and of the Navy in particular, and also with the trend that has taken shape toward reduced budgetary appropriations for defense. It also wished to document the increased role of the Navy, especially of its forward groupings, in operations varying in scale, goals and missions in distant regions of the world.

The experience of conducting operations with Navy involvement in Bosnia, Somalia, Persian Gulf areas, Haiti and Cuba was taken into account in preparing the document. The strategy of employing forces when crisis situations appear in various areas of the world underwent the main revision in the draft.

The new book confirms five primary missions constantly in effect for the U.S. Navy:

- deterrence by strategic nuclear weapons;
- fleet operations against shore;
- sea control operations;
- strategic sealifts;
- Navy and Marine presence in forward areas (introduced in 1992).

At the same time, the mission of "sea control" was supplemented by the words "and maritime supremacy."

The purpose of U.S. naval forces (Navy and Marines) is defined as follows: "They continue to perform their historic role by taking part in preventive diplomacy and assisting in other ways in conducting our policy in overseas areas. Moreover, they play a significant role in demonstrating both intentions as well as capabilities for unifying efforts with NATO partners and with our other allies..."

In connection with the disappearance of the threat of global war and with the growing danger of crises and conflicts in certain regions of the world, the direction of U.S. Navy and Marine missions also changed. A retargeting of forces is occurring, with a withdrawal from operations on seas and oceans to fleet operations against shore and to the employment of naval forces from the sea to influence events in the world's maritime-coastal areas located in a zone within immediate reach of the striking power of sea-based forces. The role of the U.S. Navy and Marines in various situations is formulated as follows:

- under peacetime conditions, readiness for employment in forward areas to prevent conflicts and control crises;
- in wartime, "fight and win";
- in postwar time, assist in restoring peace.

In the new U.S. naval strategy the primary mission of general-purpose Navy and Marine forces ("naval expeditionary forces") will be to keep them in high combat readiness to conduct operations jointly with the Army and Air Force as part of unified Armed Forces groupings in forward areas during crisis situations (so-called "expeditionary wars") for defense of U.S. national interests. The Navy and Marines must win sea supremacy and superiority in air space above waters adjoining the coast of conflict areas, in coastal waters of conflict areas, and on the coast itself to the effective range of naval precision weapons and deck-based aircraft (approximately 1,200-1,800 km from the coastline). According to calculations of U.S. specialists, the U.S. Navy is capable already now of engaging at least 75 percent of dry land territory, up to 80 percent of the globe's population and up to 80 percent of capitals of world countries with its weapons. Up to 80 percent of the coasts of continents are accessible to the U.S. Navy and Marines for landings.

The specific makeup of "naval expeditionary forces" will be determined by the situation taking shape and can be represented by the following:

- a task force, including a carrier strike force, a landing group with Marine forces aboard, a group of mine-transport forces, land-based patrol aircraft and sub-units of Special Operations Forces;
- a carrier strike force with an air-land force element of Marines aboard a carrier, which includes a reinforced Marine company, squadron of F/A-18 Hornets, composite squadron of assault transport helicopters (a

total of up to 600 persons), and 12 other aircraft and 10 helicopters (this option for giving the carrier strike force landing functions as well was approved during preparation for the U.S. Armed Forces invasion of the island of Haiti);

- a multipurpose task group made up of 1-2 amphibious assault ships/amphibious transport docks, 1-2 Ticonderoga-Class guided missile cruisers and 1-2 nuclear powered submarines with Tomahawk cruise missiles, which can perform functions either of a ship strike force (in case only ground attack aircraft are accommodated on the amphibious assault ship/amphibious transport dock or of a landing group (with a Marine expeditionary force element numbering up to 2,000 persons aboard the amphibious assault ship/amphibious transport dock);
- a detachment of landing ships (landing group) with Marine subunits aboard.
- a ship strike force with Tomahawk cruise missiles aboard.

An increase in Navy and Marine combat power is ensured by the capability of operating together with other branches of the U.S. Armed Forces and of their allies in conducting joint operations: "...a buildup of Navy ships and Marine forces can be supplemented by deployment of Army and Air Force components to create a unified force element capable of conducting any combat operations which may be required." For this, already in 1994 the U.S. Atlantic Command was given a new status, according to which it was assigned the mission of purposeful preparation of mixed force elements of branches of the Armed Forces for operations in remote theaters and conduct of joint operational and combat training of formations and units from the Army and the Air Force Tactical Air Command stationed on the country's territory, and also of Navy and Marine forces in the Atlantic. Under a special plan involving the Combat Operations Computer Simulation Center, the command staff is forming and rehearsing missions of combat teamwork training of unified operational units from all four branches of the Armed Forces.

In the course of operational and combat training, the functions of commander of the unified operational units are performed in turn by corresponding command personnel (generals and admirals)—Commanders of Second Fleet, Eighth Air Force, 2nd Marine Expeditionary Division and XVIII Airborne Corps. The Army component of the unified operational units is represented by formations and units of XVIII Airborne Corps (Fort Bragg, North Carolina), which includes four divisions, two separate armored brigades, an armored cavalry regiment as well as combat and logistic support units. It is proposed to use up to 10 tactical air squadrons and a naval formation of 30-40 ships as the air and naval components. The unified task group and operational units from the U.S. Atlantic Command which have rehearsed joint combat operations will operate both in the zone of the

"Atlantic command," as well as in the U.S. European Command, U.S. Southern Command, as well as the unified Central Command.

The role of strategic movements and protection of sea lines of communication increases considerably in case of a regional conflict: "Our success in a major regional conflict will depend on the delivery of heavy military equipment and continuous supply of the main ground and air elements operating in forward areas. Sealifts are a key factor in supporting lengthy joint operations, and we intend to have appropriate national sealift assets."

It is believed that the peacetime presence of naval expeditionary forces in forward areas will provide protection for U.S. vital interests and immediate reaction in case a crisis escalates into a conflict. According to a Navy command statement, during 1994 an average of at least 30-40 percent of all Navy and Marine forces were part of forward groupings, were on sea transits or were on calls in ports of various countries to show the flag. Their backbone "remained multipurpose carrier groups with flexible multipurpose wings of tactical Naval Aviation and amphibious groups with Marine expeditionary battalions capable of conducting special operations."

The flexibility of employing carriers and their capability of operating effectively and autonomously far from their bases make these ships very convenient for conducting operations connected with an overseas presence, especially in such areas as the Persian Gulf, where the U.S. military ground infrastructure is relatively weakly developed. For these reasons the U.S. Navy command believes that there should be carriers, amphibious ships and other combatant ships in an amount corresponding to needs both of an overseas presence as well as of possible combat operations in major regional conflicts.

It should be emphasized that in recent years the U.S. military command has striven for a more or less constant and significant naval presence (usually made up of a carrier strike force escorting an amphibious group) in waters adjoining the Near and Middle East and also Europe (above all in the Mediterranean). But their specialists believe that in the future it will possibly be necessary to experience a certain shortage of carriers in these areas to avoid "problems of moral virtue" and with consideration of other deterring factors which may arise with too long a presence of U.S. troops outside the country in peacetime. To avoid weakening U.S. positions in the sphere of regional security or to build up forces, the Defense Department spelled out a number of ways to make up for this shortage even when carriers are in another region. Thus, in some cases amphibious assault ships with AV-8B aircraft, combat helicopters and up to 2,000 Marines may become the nucleus of naval expeditionary forces. Another group may consist of a guided missile cruiser with the Aegis multifunctional system, 1-2 guided missile destroyers and 1-2 multipurpose SSN's (all armed with Tomahawk sea-based cruise missiles). Its actions are supported by P-3C Orion land-based patrol aircraft.

At the same time, U.S. Congressional Budget Office specialists concluded the need to increase financing of shipbuilding programs inasmuch as the present level of Navy financing will not ensure readiness of naval forces to perform their assigned missions. Now the Navy figures on commissioning 23 new ships from 1995 through 1999 (an average of five a year), including one aircraft carrier, one Seawolf-Class submarine, one new-class multipurpose nuclear powered submarine, 15 Arleigh Burke-Class guided missile destroyers, five amphibious transport docks, two sonar early warning ships and one battle management ship. In the period from 2000 through 2010 the Navy plans to purchase 83 new ships (an average of 7.5 a year), including three nuclear powered carriers, 15 new-class multipurpose nuclear powered submarines, 32 combatant ships (Arleigh Burke-Class destroyers and 21st century advanced combatant ships), 13 amphibious forces ships, two mine warfare forces ships and 18 support ships and vessels. But it is pointed out that if the Navy budget is not increased, the Navy will have to reduce the number of planned programs, which will have a negative effect on its combat capabilities. Many U.S. analysts believe that the Navy command will succeed in achieving an increase in financing of shipbuilding programs, since the U.S. administration views the Navy as a very important instrument of its foreign policy activity.

At the same time, to increase Navy combat capabilities the United States is taking active efforts to develop and introduce new technologies which could substantially increase the effectiveness of employing its forces. Of the more than 300 proposed programs, the U.S. Navy command rested its choice on the following ones, which provide for development and creation of:

- a highly sensitive antenna system;
- tactical system of countermeasures to infrared detection equipment for U.S. Naval Aviation;
- new missile airframes;
- a new type of ammunition for 127-mm guns;
- high-frequency phased array for submarines to receive battle management signals in real time;
- new ship electronic countermeasures systems;
- and introduction of new systems increasing the effectiveness of U.S. Navy combat training.

Thus, it is possible to ascertain a further increase in the role of Navy and Marines in the U.S. Armed Forces overseas presence. In case a regional conflict breaks out there, there will be a buildup of forces with establishment of a naval expeditionary force element (based on forces of the operational fleet and the Marine expeditionary division deployed in the forward area) "capable of performing a wide range of missions, including operations for delivering strikes over a great distance and power commitment of troops at an early stage to support or assist the arrival of second echelon forces."

Meanwhile, in the assessment of the U.S. military command, deterrence by strategic nuclear weapons will continue to be of great importance despite specific progress

toward agreement on questions of fulfilling strategic arms limitation treaties (START I and II). In accordance with them, half of the nuclear warheads will be accommodated on Ohio-Class SSBN's, which have high survivability and mobility. Thus, submarines armed with Trident system SLBM's (presently 15 units; 14 planned by 2003) will continue to make a decisive contribution to the national strategic triad: "...alert duty of strategic ballistic missile submarines at sea is being preserved for this since," the Americans note, "having a high degree of survival, our strategic ballistic missile submarines will remain critically important to national security."

But in the estimation of U.S. experts, adopting a new concept will require revising the planned program for reducing the Navy's ship order of battle (to 330 by 1999, including to 110-116 surface combatants of main types). Thus, in the opinion of Chief of Naval Operations Admiral Boorda, its fulfillment will lead to a situation where the Navy will lose to a significant extent the capability of reliable, effective performance of its assigned missions. He believes the numerical strength of surface combatants must be preserved at a level of 149, with up to 67 submarines. But as of October 1994 the Navy had 127 combatants of the main types, of which 111 were in the combat force and 16 in the reserve.

The U.S. Navy command also is taking steps to increase flexibility of employing deck-based aircraft and their capability of delivering retaliatory strikes. For this it is planned to increase the number of aircraft and crews on aircraft carriers, above all on those which arrive in conflict areas. In addition, the strike potential of carrier-based aviation will be increased by outfitting deck-based fighters with precision air-to-surface weapons and by including them in separate Marine Aviation squadrons equipped with F/A-18 and EA-6B aircraft, with their direct basing on aircraft carriers. This also will facilitate closer coordination of Naval and Marine Aviation and will strengthen their capabilities in conducting combat operations in maritime sectors. And keeping the number of Marine Corps personnel at a level of 174,000 (the base forces concept envisages the presence of 159,000) will permit increasing its rapid reaction capabilities.

On the whole, the nature and content of new U.S. naval strategy attests to the fact that reform of the Navy and Marine Corps under conditions of reduced budget financing has the goal not only of preserving, but also further increasing the military might of the Armed Forces, which the U.S. military-political leadership views as one of the chief means for guaranteed assurance of its predominant positions in the world in the short and long term regardless of the nature of development of the international situation.

New U.S. naval strategy, called upon to facilitate realization of national security strategy from a position of world leadership, is outwardly directed at preventing "regional crises and conflicts" by means of a presence and preparation for conduct of "expeditionary combat

operations in maritime-coastal areas." But in fact it provides the U.S. military-political leadership with that power capable of globally influencing over 80 percent of dry land on the globe from the sea. By exchanging quantity for quality, the U.S. Navy and Marine command is accomplishing modernization and rearmament programs, paying special attention to long-range and precision weapons with vast destructive properties. It can be said that U.S. Navy and Marine Corps efforts in the near future will be aimed at organizing the presence of naval [forces] [one or more words missing] in forward areas, with the goal announced by U.S. state leaders of preventing conflicts and controlling crises and of an immediate reaction from the sea in maritime-coastal areas with all their might in case deterrence fails and a regional conflict begins.

Laser Emission Source Detection Equipment

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[Article by Lieutenant Colonel A. Aleshin and Captain
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[FBIS Translated Text] The development of weapons and military equipment in western states is characterized at the present stage by the growing role of electro-optical equipment for various purposes. Tasks of acquiring, identifying and tracking targets, guiding weapons to them, and monitoring their destruction are assigned in particular to laser instruments which support a determination of the range to the target and its illumination for guided weapons with laser homing heads. They are included in the makeup of sea-, ground- and air-based systems and can be installed in a particular configuration on many kinds of military equipment.

Foreign specialists additionally believe that use of laser devices is promising in individual and crew-served weapon fire trainers and simulators, which permits training personnel in short time periods with fewer material costs and to assess combat effectiveness of corresponding weapon systems.

Lidars capable of detecting, identifying and tracking airborne targets at long ranges (over 1,000 km) and obtaining their actual images are considered to be a priority direction of RDT&E in the area of creating reconnaissance equipment. This makes lidars promising for use in new weapon systems (laser, accelerator, super-high-frequency and certain others).

In the course of the last 10-15 years foreign countries have been conducting large-scale scientific research and design work to create laser weapons. The present stage is characterized by a transition to the stage of demonstration tests and evaluation of technical feasibility of projects.

The wide use of laser-equipped devices in military affairs determined the directions connected with development of corresponding methods of detecting laser emission sources and differentiating them by degree of potential danger. The significance of this task increases under conditions of modern warfare, characterized by increasingly wide use of different kinds of laser equipment by the opposing sides.

The simplest means for detecting laser emissions are receivers included in sets of series-produced equipment. The latter is used, for example, in opposed-force exercises conducted in U.S. Marine subunits to assess the personnel's level of fire training and to determine the effectiveness of tactical training methods under field conditions. Their participants are equipped with sets of gear, each of which includes a rifle-mounted laser transmitter and two sets of electro-optical laser emission receivers. The low-power transmitter presents no danger to organs of vision (the emission wavelength is 0.85 microns) and its effective range reaches 3,000 m. Each transmitter is given a code to identify exercise participants based on results of fire. A hit is noted by an audible signal and is counted when one of the emission receivers receives a coded pulse sequence in a certain manner. Similar receivers also can serve as individual means warning of enemy readiness to use weapons with laser sights. Despite differences in design and purpose, the gear includes receivers, a video signal amplifier, a power supply element and an audible or light warning device.

The United States and Germany hold leading positions in developing and creating individual laser emission receivers. In particular, in 1990 the U.S. company Tracor delivered over 400 sets of such devices, known by the name SLIPAR, to the U.S. Armed Forces as well as to those of Australia and Canada. According to foreign press reports, Marines as well as deck-based aircraft and helicopters which took part in Operation Desert Storm were equipped with them.

The most prevalent one is the MILES (Multiple Integrated Laser Engagement System) multipurpose system for simulating combat operations, a piece of training equipment permitting the conduct of opposed-force exercises under near-real conditions. It provides a simulation of the effect of different kinds of weapons, from the M-16 assault rifle to artillery pieces, and there is a corresponding set of laser emission receivers for each of them.

The LDS laser emission receiver for individual use, created by Messerschmitt-Bolkow-Blohm (MBB), has become rather widespread in Germany. Its operating band (0.4-1.1 microns) can be expanded to 1.6 microns or more. Receiver sensors are made on the basis of silicon photodiodes. The time of a battery's continuous operation is at least 12 hours.

Devices warning of the laser emission of weapon guidance equipment are technically more complex. In contrast to the receivers examined above, they not only have

to register the fact of the presence of such an emission, but also determine the coordinates of its source and the degree of probable threat. One of them is the RL1 gear (Fig. 1 [figure not reproduced]) developed by the Norwegian company Simrad and intended for detecting the emission of laser rangefinders and target designators operating in the 0.66-1.1 micron band. The majority of modern pulsed lasers having active elements made on the basis of yttrium-aluminum garnet (YAG) or triple-valent neodymium ion-activated glass function in this band of the electromagnetic spectrum.

The RL1 device, consisting of a laser emission receiver and data display device, can be mounted on different kinds of platforms, from armored and motor vehicle equipment to aircraft, helicopters and combatant ships. Thus, a receiver monitoring the upper hemisphere is positioned on the superstructure or mast and consists of five sensors (each with a 135° field of view angle): four, with mutually perpendicular optical axes, monitor the horizontal plane and the fifth is oriented in the vertical plane. The sensors are connected with electronic amplifiers which amplify signals coming over a communications line via a digital parallel-series converter to a data display device consisting of a converter-decoder and display. The decoder converts data received from the four horizontally positioned sensors and outputs the direction to the laser emission source registered on the display in eight sectors (in each there are light-emitting diodes positioned in a circle at 45° intervals). The ninth diode is in the center of the circle and denotes the target on its vertical display sensor. There also is an audible device which sends a signal on detecting laser emission. It is so adjusted that when a single pulse hits one of the sensors a signal sounds for one second, and if there is more than one it sounds continuously throughout the time of illumination.

In particular, the AN/AVR-2 (developed by the U.S. firm of Perkin-Elmer) is one of the standardized laser emission warning systems. By order of the U.S. Defense Department, the U.S. companies of E-Systems, Loral and General Instruments subsequently created several of its modifications for different kinds of military equipment. The system was appropriately modified for U.S. Navy Cyclone-Class patrol craft (Fig. 2 [figure not reproduced]) for the purpose of combining it with the AN/APR-39 radar illumination warning station. The set includes four modules of SU-130/AVR-2 sensors, which provide all-around surveillance, and the CM-493/AVR-2 electronic module for classifying the laser emission and communicating with the other systems. Overall weight is 8.85 kg, voltage input is 28 volts and mean time between failures is 1,200 hours. To reduce the likelihood of laser emission reflected from the sea surface hitting the receiver, the equipment includes special optical filters designed to pass the emission only of that band in which the majority of laser rangefinders, target designators and target illumination devices operate. The CM-493/AVR-2 module inputs audio and visual data on a laser emission to the AN/APR-39 display.

In the opinion of western specialists, this system's reliability ensures its high competitiveness on the world arms market, as confirmed by its purchase by Germany, Great Britain, France, Sweden and Israel for installation in helicopters and patrol craft. There is a total of more than 6,000 sets of such systems of various modifications in the inventory of a number of countries.

The British company of Avimo developed the LWD21 laser emission warning set (Fig. 3 [figure not reproduced]), which can function independently and can be installed on any platform. It consists of sensor and data display modules. All-around surveillance is supported by 12 electro-optical, silicon photodiode sensors. The data display panel has 25 light-emitting diodes: 24 are located around the perimeter, and one in the center notifies an operator about an emission from above. They permit determining the direction to a laser emission with an accuracy of 15°. In addition, the LWD21 set provides audio and light signaling warning of the presence of laser emission.

According to foreign press reports, one direction for upgrading laser emission warning systems is their consolidation with other electronic equipment, including with ELINT collection and countermeasures sets. For example, the LWS-20 set (Israel) is combined with the SRS-20 (radar illumination warning) and SPS-20 (ELINT collection) sets. Work also is being done to integrate laser emission detection equipment with fire control systems.

The need for determining emission parameters of enemy laser equipment for offering effective countermeasures and for protecting friendly laser equipment necessitated the development of special sets. Higher requirements are being placed on them—the direction finding error must not exceed one degree and wavelength resolution must be 0.1 micron or less. Sensors permit detecting laser equipment at a distance over 15 km because of rereflection of the beam. In addition, the operating waveband has been widened for such sets and limits for measuring pulse duration and repetition frequency have been increased. The COLDS set (Fig. 4 [figure not reproduced]) developed by the German MBB company meets these requirements to a sufficient degree. Its various modifications have been tested aboard ships, aircraft, helicopters and armored equipment of U.S., German and British armed forces. The basic COLDS set has an operating band of 0.4-2 microns, which can be widened considerably if necessary. Sensor units support surveillance in the horizontal plane around the entire horizon, and in the vertical plane laser emission is received in the sector from +45 to -45°. Elevation and azimuth resolution is 3° (an improvement of this characteristic to 1.5° is possible). The set permits processing data on two targets simultaneously because of a programmable processor which is part of the gear. In addition to determining the direction to a laser emission source, it also can be used to determine wavelength, kind of emission, pulse repetition

frequency and type of laser device. It has a high probability of determining the nature of laser emission, a low false alarm level, and large effective range.

The presence of such systems on platforms permits offering prompt countermeasures to guided weapons which use laser equipment, executing an evasive maneuver, placing decoys and so on. The appearance of tactical laser weapon systems presumes the need to create more sophisticated laser emission warning systems providing timely determination of emission wavelength, operating mode (pulsed, frequency or continuous) and modulation and also measurements of power characteristics and coordinates, which permits performing an initial classification of the emission source and determining the degree of danger.

Foreign specialists consider development of equipment which can be placed aboard satellites to be a promising direction for creating laser emission source warning equipment. RDT&E in this area presently is in the conceptual study stage.

Three options are proposed for positioning satellites in orbit, the first of which envisages insertion of satellites into circular orbit 1,000 km high with an orbital period of up to 100 minutes. This will support conduct of close-look reconnaissance of small laser emission sources and a reduction in weight-size characteristics of onboard gear. The second option envisages insertion of satellites into elliptical orbits (apogee altitude to 40,000 km, inclination 63.6° and orbital period 12 hours). The time of effective observation of laser units at any point on Earth with one satellite is around 3 hours, and eight satellites can support around-the-clock surveillance. But with that option it is necessary to resolve complex engineering problems connected with a change in signals of electro-optical gear in the course of the satellite's orbital movement and also in the background environment, which can have a negative effect on the process of detecting laser emission sources. In the third option satellites are in a stationary orbit (36,000 km) and support around-the-clock surveillance of assigned targets, but a substantial drawback in this case is their use primarily in equatorial zones (to 35° north and south latitude), and optical systems with an aperture of around 2 m are necessary to provide requisite resolution.

The process of creating means of detecting laser emission sources is characterized by the development of standardized gear supporting their effective detection and classification. In the opinion of western specialists, the presence of laser emission detection equipment in Navy tactical data systems substantially increases a ship's combat stability under conditions of modern warfare.

Main Directions of Development of Ground Troops Air Defense

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[Article by Colonel A. Manachinskiy, candidate of military sciences, and Colonel V. Chumak, candidate of technical sciences, under rubric "Ground Troops"]

[FBIS Translated Text] There presently is a wide spectrum of air defense weapons in the inventory of foreign armies, among which SAM complexes are given a priority role. This is explained by a number of merits of SAM complexes, including constant readiness for combat employment, capability of detecting airborne targets at long ranges, capability of tracking several flying targets simultaneously, automation of processes of preparing the necessary number of missiles for launch to engage several targets, high probability of destroying the airborne enemy, and stability under the effect of unfavorable meteorological factors.

SAM complexes are being developed along two interrelated directions: creating new complexes based on the latest scientific and engineering achievements; and modernizing SAM complexes in the inventory. Some technical elements (radars, SAM's, launchers, base chassis, and individual systems and modules) usually are upgraded in the course of modernization, although it is not precluded that new components also will be introduced to the complexes.

Specialists are concentrating main efforts on improving the characteristics of acquisition and tracking radars in which adaptive signal processing methods are widely used. Phased arrays (Fig. 1) [figure not reproduced] are being used more and more actively as antennas, and the radars themselves are being supplemented by passive target acquisition and tracking systems: thermal imaging, optical, laser (Fig. 2) [figure not reproduced]. A growing number of radars are equipped with an automatic target identification system. Identification is accomplished by computer based on results from processing data coming from the radar and comparing them with characteristics of an airborne target stored in computer memory. Targets are determined by class of airborne vehicle: bomber, fighter, fighter-bomber, attack aircraft, radar reconnaissance aircraft, cruise missile, decoy. In the future they will be identified individually based on parameters of each named class.

To increase the acquisition range of airborne targets, the radar emission is concentrated in one direction and special analyzers of a reflected signal's doppler components are being introduced, which permits identifying a hovering helicopter. Specific methods, particularly adaptive moving target indication and adaptive space-time discrimination of signals, are being introduced to protect radars from interference. Discrimination devices themselves also are being upgraded at the same time. Multiple redundancy of target data obtained from radar, optical, thermal imaging and laser systems also is planned.

To protect radars against active jamming, it is proposed to shift to coherent emission and to complex-shaped sounding signals, vary radiated power, retune the transmitter's carrier frequency within a pulse group, and change pulse repetition frequency randomly or according to a computer-implemented program. It is also planned to automatically select the sector of operating

frequencies least subject to the effect of interference (i.e., to adapt the radar transmitter to the interference environment)

It is believed that the reaction time of SAM complexes can be reduced to four seconds by increasing target designation accuracy, introducing systems for automatic selection of a target tracking channel not neutralized by jamming, automating all operations (right up to total exclusion of operator functions) and using superhigh-speed computers

In the course of upgrading SAM complexes, a trend can be clearly traced toward their increased mobility, rate of fire, power of missile warhead, and carried reserve of SAM's, with a simultaneous simplification of the launcher reloading process. The increased mobility of the modern SAM complex comes above all from the placement of its elements on mobile equipment with high offroad capability (all-terrain vehicles, prime movers). Such complexes redeploy rapidly to new positions and are made combat ready in minimum time periods (Fig. 3) [figure not reproduced].

In the near future it is planned to launch SAM's from vertical launchers, which will permit reducing their size and weight, excluding the need for using traversing and elevating mechanisms, and conducting fire against targets approaching from any direction. In a vertical launch, SAM's do not require preliminary correction; after launch the motor supports a rapid change (deviation) from the flight path, the autopilot turns it in the direction of the target according to a given program and then the homing head goes into action. With several SAM's launched simultaneously the rate of fire is determined only by capabilities of the missile guidance radar.

The United States and a number of other countries are conducting intensive RDT&E aimed at solving the problem of guiding missiles over fiber-optic cable light-guides. This provides an opportunity for employing SAM's against both airborne and armored ground targets. Increased antijam protection also is an important property of a fiber-optic cable. The Americans are developing such a system, intended for engaging not only helicopters, but also tanks beyond line-of-sight limits (at a range of 6-7 km). At the same time, the fiber-optic cable also has inherent drawbacks: relatively low strength and rapid attenuation of the transmitted signal, limiting the SAM's range capability. Foreign experts believe that these drawbacks may be eliminated in the very near future, which will permit substantially increasing the cable length.

The question of creating a SAM complex on an elevated platform is being examined. Its use will permit increasing the effectiveness of air defense against strikes by low-flying targets and simultaneously reducing the vulnerability of combat teams of SAM complexes.

In the opinion of foreign specialists, full realization of combat capabilities of present and future air defense

weapons will come only from further automation of their control. Intensive work is being done for these purposes to modernize the automated control systems of command posts of the brigade (or a group of battalions) and of air defense battalions, batteries and complexes and to introduce automated control systems to short-range SAM complexes. Such an automated system already has been created and permits controlling the fire of up to 40 air defense complexes

Timely provision of data on airborne targets to air defense weapons is considered no less important. In this connection the question is being examined of setting up a target designation channel from an individual acquisition radar or from a SAM complex that has been moved forward, which should have a search radar permitting target coordinates to be determined and relayed

An option is being examined for consolidating up to six radars of SAM complexes into a unified system, with their functioning in a chain in a "master-slave" mode. Slaves will be able to receive data over a communications channel on all targets in the area being scanned by the master radar, which in addition issues data on safe air corridors for the overflight of friendly aircraft.

Networks for receiving air situation data from radar early-warning aircraft are set up at air defense unit command posts, which permits SAM complex radars not to be turned on to emit until targets enter their guaranteed engagement zones.

The upgrading of SAM complexes also affected the development of air defense artillery. Based on research, exercise results and the experience of local wars, foreign military specialists concluded that 20-40 mm air defense artillery remains a rather effective means of combating aircraft, drones and helicopters operating at low and extremely low altitudes. This is explained by the fact that SAM complexes cannot perform all missions of air defense artillery and cost considerably more, with effectiveness being equal.

Such advantages of air defense gun complexes as high survivability under fire pressure from the air, operational reliability and antijam capability also were revealed in the course of local wars. In addition, with massive employment, air defense guns turned out to be simpler for personnel to master.

All this activated RDT&E in the area of air defense artillery, including the following: improvement in airborne target acquisition and fire control processes; improvement in characteristics of guns and ammunition; integration of air defense gun complexes with other air defense weapon systems; and improved maneuverability, survivability and operating indicators. Specialists are revising views on combat employment of air defense gun complexes and are concluding that SAM complexes and air defense gun complexes have specific areas of application where they supplement each other with greatest effect. As a result, a concept was adopted

for their joint use in a unified complex for organizing tactical air defense on the battlefield. The main role in destroying airborne targets at maximum ranges and at high, medium and, partially, low altitudes is set aside for SAM complexes, and priority use of air defense gun complexes is deemed advisable in the near zone (1,000-3,000 m), and mainly against aircraft and helicopters operating at low and extremely low altitudes (Fig. 4) [figure not reproduced].

Surface-to-air missiles, which represent the greatest danger to aircraft at medium and high altitudes, force aircraft to descend and enter a zone where the fire of air defense gun complexes is especially effective. And only air defense guns are capable of operating against offensive air weapons in the "dead" zone of SAM complexes.

Work to support timely detection of the air enemy is being carried out in two directions: improving target acquisition and tracking equipment, which is part of the complex, and developing automated target designation equipment.

Different kinds of information channels—radar, electro-optical, laser, television and thermal-imaging—are being integrated within the scope of the first direction. This guarantees the provision of data on the air enemy to air defense gun complexes around the clock under the effect of jamming and in adverse weather conditions. Greatest attention is being given to radars, which continue to be a very important means of acquiring airborne targets. Modern methods are being realized for improving acquisition characteristics: as coherent interference compensation, which acts on radar antenna radiation pattern sidelobes, polarization discrimination of signals, and formation of adaptive radiation patterns.

Target indication systems are being introduced to the makeup of radar equipment to improve quality of radar surveillance against a background of passive interference. Such target indication systems are being developed and improved along the following directions: replacing or supplementing comb filters with a number of narrowband doppler filters; using the output signal of a narrowband filter which discriminates signals with zero doppler frequency; using a coherent sequence of intrapulse-modulated, complex-shaped sounding pulses for increasing the radar's effective range and antijam protection; and widely introducing microprocessors for signal processing. Introducing an increased radar transmitter power mode also should be included here; in a number of cases this permits improving the signal-to-noise factor.

The creation of two-channel radars—SHF and EHF wavebands—stands out among new approaches to solving the problem of antijam protection of radars. EHF-band radars for acquiring and tracking low-flying targets will become widespread in advanced air defense gun complexes. Their main advantages will be a high degree of protection against EW equipment and sufficient effective range under conditions of artificial smokiness, rain and fog. Using a narrow antenna radiation

pattern and digital signal processing systems increases tracking precision and enables target identification.

Compared with radars, acquisition lasers have less complicated design, better antijam capability and higher resolution, which permits reproducing target outlines and provides a greater likelihood of identifying a reflected signal containing characteristic target features and determining its affiliation according to the identification-friend-or-foe (IFF) principle. In addition, they enable measuring target speed with greater accuracy in a wide range.

Foreign specialists believe that a radical method of increasing the protection of an air defense gun complex radar against the effect of jamming is to back it up with an IR system in combination with a laser rangefinder. The rangefinder's operating wavelength is 10.6 microns, because of which it can be used as a source of illumination for an IR system functioning in the 8-12 micron band. Illumination of a target increases its range of acquisition by the IR system, and the growing temperature signature of the target of detection and position finding increases the probability of identification.

IR systems permit acquiring airborne targets at any time of day, are not very susceptible to jamming, have high concealment and resolution in terms of angular coordinates (especially of low-flying targets), and identify targets according to the nature of the emission spectrum. They have a simple design, light weight, small size, and low cost compared with radar equipment.

Specialists believe that the integration of search systems is very effective when they are supplemented with a TV channel whose chief element is a TV camera operating at low levels of illumination. Usually such a camera has a variable field of view: a wide field (7-8°) is used in a target search and a narrow field (to 2°) with the shift to an identification and tracking mode. The TV camera combines TV and laser rangefinder channels, which reduces equipment volume and cost.

Developers of air defense gun complexes are attempting to solve one of the most difficult air defense problems—protecting troops against low-flying targets—by creating automated target designation systems permitting an increase in the amount of time, which is needed for providing air defense guns with firing data.

An automated system of radar acquisition of the air enemy in a forward area is in the U.S. Army inventory. All its devices (target acquisition radar, IFF equipment, communications equipment and power supply source) are mounted on one wheeled vehicle with good offroad capability. The system operating principle is as follows: the radar reconnoiters low-flying aircraft and helicopters in the division area of responsibility, during which offensive air weapons are detected and identified and data on them are coded and automatically transmitted to portable receiver-indicators of air defense weapon teams. The operator observes the indicator grid squares

light up, and the color of a grid square corresponds to the affiliation of the target of detection and position-finding (green signifies "friendly aircraft," red "enemy") and coordinates can be determined from its position on the screen. The indicators are supplied with sound signaling to attract the operator's attention. Data coming to combat teams permit determining the target search sector in advance and acquiring the target in a timely manner.

A simplified acquisition and target designation device has been developed abroad. It is accommodated right on the operator's helmet and includes the following elements: a helmet adjusted to the operator's head size and facial features, with gear mounted on it for determining the orientation of the line-of-sight to the target (the gear has an optical sight focused on infinity and so fitted that its reticle is directly in front of the operator's eye); a control unit (fastened on a belt to the operator's waist), with which initial data, i.e., range and speed, of the processed target are determined and the subunit is selected for bringing it under fire (communications equipment also is accommodated in it); a computer, which determines the azimuth and tube elevation of each gun with consideration of parallax between the operator and the air defense guns (the container with the computer is at the operator's feet during combat work). All elements of the acquisition and target designation helmet device are connected with each other and with the air defense guns by cables.

The system's operating principle is based on the fact that in controlling one or more subunits, the line of aim of the air defense weapon is connected with the operator's line of sight. The azimuth and elevation of the line of sight between operator and target are determined by a set of sensors oriented on North and on the local vertical. These data are processed by the computer, which converts them into data of angles of aim, which then go to air defense gun servosystems in the form of control commands. Thus, as the operator lines up the line of sight on the target using the helmet acquisition and target designation system, the line of sight is converted into data of angles of aim for the air defense weapons.

The helmet acquisition and target designation device was successfully tested with 20-mm air defense guns. Specialists assert that it will be possible to use it as backup equipment for radar reconnaissance and target designation systems for various types of air defense complexes. It is planned to use the helmet device for providing target designations to crews of portable SAM complexes. In addition, with slight design changes it will be possible to interface it with other weapon models.

The combat effectiveness of air defense gun complexes depends directly on fire accuracy as determined by the

sophistication of fire control systems, which as a rule function at any time of day and in the presence of jamming without restraints for weather conditions. Priority directions of their upgrading have clearly formed of late. First of all, radar systems are being developed more and more. Trends toward use of higher radio frequency bands (such as EHF) and introduction of solid-state transceiver assemblies, antijam protection devices and digital signal processing devices are characteristic of air defense gun complex fire control system radars. Secondly, the process of acquiring and tracking airborne targets is being automated by including threshold devices, particularly with an adaptive threshold change, in the equipment. Thirdly, airborne target identification equipment that uses data of a varying nature (time, spectral, spatial) contained in the echo signals is being widely introduced. Fourthly, with consideration of radars' vulnerability to organized ECM, backup equipment—IR, TV, laser, optical—is being installed. Fifthly, new onboard computing devices based on superhigh-speed processors are being developed.

Simpler air defense artillery fire control systems also have not been rejected abroad. As a rule, they include an optical sight with variable magnification and a very simple computing device, which provides satisfactory quality of fire both against airborne as well as against ground targets in VFR weather. Lately they are being equipped with TV systems, a laser rangefinder and IFF equipment.

In searching for optimum solutions, western specialists are experimenting widely with 20-40 mm air defense gun complexes. Such guns have increased accuracy characteristics and a high rate of fire. With their ammunition filled with modern explosives and submunitions, they are most adapted for combating low-flying targets (Fig. 5) [figure not reproduced].

To reduce ammunition expenditure and increase the probability of hitting an airborne target, work is under way to create projectiles with terminal phase guidance: active and semiactive laser or radar homing, IR passive homing, and laser beam guidance. It is expected that such a projectile will be equally effective when firing against maneuvering targets (low-flying and diving) and hovering helicopters.

Inasmuch as air defense artillery has become an inalienable element of army mechanized and tank formations, its successful actions are ensured above all by high mobility and self-sufficiency. In this connection, armies of a number of countries are devoting great attention to creating self-propelled air defense guns. Original design solutions are being used more and more widely: spaced placement of guns on the sides of the turret to keep powder gases from entering the fighting compartment;

noise level reduction; improved habitability; making servicing and control easier; and combined installation of guns in a minimum area in the frontal part of the turret to improve grouping and fire accuracy when firing bursts, which reduces the load on control servosystems.

There are air defense guns and missiles in the makeup of combined air defense complexes. As a rule, such complexes have a common fire control system, which includes acquisition and tracking equipment, digital computer, and identification and control systems. Foreign military specialists have concluded that it is advisable to have surface-to-air missiles with passive IR homing as part of SAM-air defense gun complexes. In this case the advantages of this complex are realized most simply, after a missile is launched, the crew is not required to participate further in its guidance and it has an opportunity to immediately shift the fire of air defense guns to targets in the near zone (at ranges to 3 km). Thus the "dead zone" of the SAM complex is covered and a continuous zone of engagement is created. The gun component of the SAM-air defense gun complex as a rule is represented by 20-40 mm rapid-fire air defense guns.

The possibility of using a command guidance system or laser beam control of the missile in such complexes is being considered. In this case it is planned to use the air defense guns chiefly for defense of the complexes, which as a rule are installed on tracked or wheeled chassis with good offroad capability. For example, the Israeli firm of Rafael together with the U.S. firm of General Dynamics developed the HVSD/ADAMS (High-Value Site Defense/Air Defense and Anti-Missile System) SAM-air defense gun complex accommodated on the chassis of a vehicle with good offroad capability and including the Vulcan-Phalanx air defense gun complex and the vertical-launch Barak SAM complex. It supports engagement of airborne targets at ranges up to 12 km (Fig. 6) [figure not reproduced].

Italy has created the Skyguard-Sparrow SAM-air defense gun complex, Egypt the Sinai-23 SAM-air defense gun complex (the twin 23-mm ZU-23-2 air defense gun and a modified version of the Strela-2M SAM are used), and the United States the ADATS air defense complex, on which a 25-mm air defense gun and SAM are mounted. The 40-mm towed air defense gun and Stinger portable SAM complex missiles mounted on the same base have been tested.

Foreign specialists believe that combining SAM complexes and air defense gun complexes will permit expanding the zone of engagement of the air enemy and increasing the effectiveness of combating him, with fuller use made of the advantages of each kind of air defense weapon.

Night Air Combat Operations

95UM0350C Moscow ZARUBEZHNOYE
VOYENNOYE OBOZRENIYE in Russian No 2, Feb
1995 (signed to press 14 Feb 95) pp 32-38

[Article] by A. Drozhzhin, doctor of military sciences, professor, and Major S. Anedchenko, under rubric "Air Force"]

[FBIS Translated Text] The U.S. Armed Forces command is analyzing the possibility of a military conflict breaking out in distant areas of the globe and a situation being created in which advancing enemy tank and motorized troops must be urgently stopped in the absence there of U.S. tactical and deck-based aircraft. To this end options presently are being considered for employing new B-2 strategic bombers based in the continental United States. It is believed that the absence of aircraft for fire suppression of air defense weapons, EW aircraft and fighter cover will affect air operations in the first few hours of a conflict. Under these conditions U.S. military experts assume that the low-signature B-2, which compared with the B-52 and B-1B has greater survivability with the same payload and an increased radius of action, can become the sole effective means of penetrating air defense and conducting flight operations in the enemy rear at night and under adverse weather conditions. As shown by calculations made by U.S. Rand Corporation specialists, the B-2 bomber is capable of delivering a strike with conventional weapons against targets in any area of the globe with one aerial refueling. It is presumed that in one attack three B-2's can destroy several dozen armored vehicles using the guided air-delivered cluster units known as Skeet SFW (Sensor Fused Weapons) containing submunitions.

The low-signature nature of the bombers, night conditions and the onboard radar's capability to discriminate targets against the Earth's background permit rejecting use of long-range guided weapons in favor of the SFW. Each antitank submunition is assigned its own target. During high-altitude bombing, aiming data are determined by a synthetic aperture radar. To achieve surprise, onboard radars will operate briefly and with frequency retuning.

In the future small, light, inexpensive antitank munitions may be used to destroy important small mobile targets dispersed over a large area. In addition to delivery by aircraft, they will be delivered with the help of low-signature drones with low aerodynamic drag which can be on an external hardpoint and in the bomb bay of B-1B and B-2 bombers and on an external hardpoint of tactical fighters. It is presumed that the drone will be released from the bomber at an altitude up to 15 km, accelerate to a speed of Mach 2.5, and then glide for a lengthy time to the target area. In overflying the location of tanks or mobile launchers, munitions will be released from the drone and each of them independently detects a target in an area of 1.25 km².

It is considered possible for the B-2 to accommodate several pods with 800 submunitions, which can engage

up to 500 wheeled and tracked vehicles or tanks (see table).

Force Detail for Performance of Combat Mission

Missions	Required Number and Types of Aircraft			
	With set of conventional bomb ordnance	With set of precision weapons	With set of precision weapons	Bombers
Delivery of strike	32 F-16 ¹	16 F-16 ¹	8 F-117A ²	2 B-2 ²
Escort	16 F-16 ¹	15 F-15 ¹		
Suppression of enemy air defense system	4 EF-111 ¹ , 8 F-4G ¹	4 EF-111 ¹ , 8 F-4G ¹		
Aerial refueling of strike and support aircraft	14 KC-135	11 KC-135	2 KC-135	
Overall number of aircraft (flight personnel)	74 (132)	54 (116)	10 (16)	2 (4)

1. Conventional-signature aircraft

2. Low-signature aircraft

In examining a probable conflict in the Near East (15 B-2 aircraft are in combat readiness), the following option is considered optimum: 2 B-2's in the combat operations zone, 8 in various [one or more words omitted] to base, 2 being refueled at a U.S. base and in the process of preparing for mission departure, and 3 in periodic technical servicing. As a result, ten aircraft are constantly in the air and regular fire pressure can be exerted against advancing reserves in any weather conditions.

Calculations by Rand Corporation show that in attacking mobile targets the effectiveness of medium-range (up to 100 km) air-to-surface guided missiles is considerably higher than cruise missiles. It is believed possible to use B-1B bombers against a troop column only after B-2's hit the primary air defense targets and create corridors safe from the effect of SAM's.

According to views of specialists, a more realistic option is the joint use of 15-20 B-2's and 6-10 tactical air wings (430-720 aircraft) against several advancing armored and mechanized divisions. It is important to emphasize that combat operations must be conducted with equal intensity night and day, and their intensity depends on the range of the aircraft and the professional training of flight and technical personnel.

The U.S. Air Force has formed the first composite air wings for large-scale operations over the entire territory of enemy troop dispositions with performance of missions of comprehensive support to Army units in their deployment areas in overseas TVD's [theaters of military operations]. Based on the experience of exercises which have been held, the first strikes have been delivered mainly under nighttime conditions. The composite air wings include F-15C, F-15E, F-16, A-10A, B-1B, KC-10, KC-135 and E-3A aircraft. Other versions of the makeup of such wings for performing various missions also are being worked out, but they are experimental in nature for now.

The U.S. Defense Department is examining the possibility of creating several air wings trained for night operations. It is presumed that A-10 attack aircraft and F-16 tactical fighters can fly 600-700 missions in a night. While in 1988 the U.S. Air Force had only 10 percent of attack aircraft (F-117A, F-15E and F-111F) which could perform night operations, their number will grow to 35 percent by the year 2000 after the outlined plan is implemented.

According to the U.S. Air Force command's plans, the F-16 is to hold a special place in the future in the fleet of combat aircraft capable of performing missions under nighttime conditions (around 60 percent of tactical fighters in the Air Force are represented by aircraft of this type), but it did not show itself to advantage in the course of combat operations in Iraq (1991). In that period its onboard equipment did not allow flying under nighttime or adverse weather conditions, and its combat radius did not enable it to engage targets in the depth of the country's territory.

With consideration of the prevalence and promising nature of the F-16, a program, AFTI (Advanced Fighter Technology Integration), was developed for its modernization aimed at increasing the effectiveness of mission performance during flight operations at night and at low altitudes through an improvement in onboard electronics.

The question is being discussed of installing the Falcon Knight weapons aiming and navigation system on the aircraft to support delivery of strikes against targets in any weather conditions day and night. It includes second-generation forward-looking infrared, modernized AN/APG-67 radar, and fire control equipment. Data will be displayed on the pilot's helmet display. The system will permit acquiring targets at long range with their subsequent automatic lock-on by air-to-air and air-to-surface guided missile homing heads, and also launching missiles and breaking off into a zone safe for the aircraft. This is

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considered a necessary condition for successful air operations against ground targets, which was confirmed by experience of the Persian Gulf war, when because of the short target acquisition and lock-on range, pilots of high-speed aircraft did not manage to launch guided missiles on the first pass in a number of cases.

The IR set of the Falcon Knight system consists of two optical subsystems accommodated in turret mounts and supporting the operation of two independent channels. One is for solving navigation problems and the second for supporting the launch of guided missiles. Lines of sight of the channels are controlled by turning the helmet display. The image of the target being tracked is formed in the lower corner of the sight screen, and its remaining part is taken up by the image of terrain formed in a wide field of view by the second channel.

The new system outputs a more precise picture of the terrain both at low as well as high altitudes. In addition, there is an absence of image clutter with high thermal contrast of targets, which permits observing objects situated next to each other.

American specialists believe Falcon Knight has a number of advantages over pod accommodation of equipment on an external hardpoint. This is reflected in use of the helmet display with controllable field of view (by a turn of the pilot's head) and improved conditions for observing surrounding space. Moreover, integrating the IR set with the radar will permit a sharp reduction in equipment weight compared with the two-pod LAN-TIRN system. Accommodating Falcon Knight system elements within the aircraft reduces drag, which leads to reduced fuel consumption and improved aircraft maneuver characteristics.

The target area situation, containing a digital terrain map and data from the Pave Penny laser target tracking system coordinated with the automatic target designation system and an advanced digital modem (supports intercommunication with target designation systems being used in the Navy and Army), is displayed on F-16 cockpit color displays.

Installation of Falcon Knight on F-16C's will permit using the JDAM and JSOW new-generation all-weather precision weapons and the low-signature TFSAM guided missile, and also performing reconnaissance with real-time data transmission.

In conducting reconnaissance, the IR image of a target is transmitted via an EC-130 relay aircraft to a ground or airborne command post. Then data go to strike aircraft, now in the form of target designation commands. The video data necessary for acquiring targets or determining an optimum flight route will be reproduced directly on the color television screen in the pilot cockpit.

It is proposed to place equipment in F-16C tactical fighters which includes the new Have Sync jam-resistant

VHF/UHF [UKV] communications system, satellite radionavigation system receivers, and a laser target illumination device.

Studies are being conducted abroad on reducing the signature of aircraft with a conventional radar cross-section by optimizing the configuration and using radio-absorbent coatings and composite materials. The F-16C's radio-absorbent coating, for example, is applied to wing leading edges, air intake and tail unit. Gilded glazing of the cockpit canopy also is used. These measures permitted cutting the aircraft's radar cross-section in half (to 1.2 m²) compared with the F-16A.

In planning night combat operations the U.S. Air Force command attaches special significance to low-signature aircraft capable of delivering precision strikes against the most important enemy targets. By 2001 36 F-117A's and 20 B-2's will make up only two percent of the combat aircraft fleet, but by 2005 (after the beginning of series production of the F-22A) the F-117A, B-2 and F-22A already will comprise 10 percent. In the opinion of U.S. specialists, despite the relatively small number of these aircraft, they will be able to support performance of the primary combat missions.

The F-117A tactical fighter, intended for delivering strikes with precision weapons primarily at night and in adverse weather conditions against the most important targets, has been developed using stealth technology, which provides a minimum level of radar, infrared, visual-optical and acoustic signature in flight. A thermal-imaging display of individual terrain sectors is projected on a central multi-function display in its cockpit, with a simultaneous display of readings of the attitude director indicator as well as airspeed and altitude data. Two auxiliary displays are located on both sides of the central display; they are smaller in size and permit monitoring the operation of aircraft systems, communications equipment and weapons. The equipment also includes the AN/AVQ-28 head-up display, SPN/GEANS inertial navigation system, IRADS electro-optical weapons aiming and navigation system, aerodynamic parameters computer, flight control system computer, AP-102 fire control computer, ILS instrument landing system receivers and a radioaltimeter.

The F-117A has folding (or removable) outboard wing panels and tail fins, which permits moving it to any area of the globe in the C-5 Galaxy military-transport aircraft together with servicing personnel and equipment, and also aboard merchant transport vessels and large combatant ships (basically aircraft carriers).

Before the year 2000 it is planned to equip the F-117B with an onboard radar with high operational security having a planar directional antenna supporting receipt of a radar terrain image, and also new-generation forward-looking infrared sets, receivers of the NAVSTAR satellite radio navigation system gear and a secure communications system. It is planned to introduce multifunctional color displays to equipment in the pilot

cockpit showing a moving terrain map, strike targets, flight plan and options for performing the combat mission. An engine with large thrust and lesser fuel consumption and acoustic noise level will be installed in the F-117B.

According to foreign press data, the system of training F-117 flight personnel has been changed. Four nights a week are set aside for pilot training (the first night from Monday to Tuesday in one section and the others in two sections). The duration of one flight does not exceed 80-90 minutes, during which flying techniques, air navigation, and the search and destruction of ground targets are rehearsed. Flight routes are plotted at medium and high altitudes and a descent is made to 600-900 m in the target area. Radio silence is strictly observed. A crew is assigned 2-14 targets for search training. A flight with aerial refueling is planned once a week (pilots of conventional aircraft perform three aerial refuelings in a half-year).

The equipment of the F-15E tactical fighter (weapons aiming and navigation, communications and EW, and the IFF system) permits delivering strikes against ground targets at any time of day and under adverse weather conditions. The weapons aiming and navigation system is of greatest importance for performing a night mission: it includes the AN/APG-70 multifunction radar, LANTIRN target designation and navigation system as well as LN-93 inertial navigation system.

The onboard pulse-doppler radar operates in the 3-cm band and supports acquisition of targets with the simultaneous capability of maneuvering with load factors to 4. Airborne targets are acquired at a range up to 185 km, and individual aircraft in an element are discriminated with a distance of 30 m between them. In the presence of jamming, the radar analyzes the signal and automatically changes operating frequency, amplitude, pulse repetition frequency and receiver sensitivity.

The LANTIRN weapons aiming and navigation system is accommodated in two suspended pods. In one is a radar providing an automatic terrain relief following mode and a FLIR set with a wide field of view. The second pod contains equipment for identification, lock-on and tracking of targets as well as target designation when a Maverick guided missile is launched. This equipment includes a FLIR set with two fields of view, a laser rangefinder-target designator, an automatic target tracking device and a missile line-of-sight correlator. Laser illumination is provided at a range of 16-18 km.

F-15E electronics also include the JTIDS joint communications and information distribution terminal. It outputs situation information—aircraft (friendly and enemy), the location of SAM system positions, airfields and the line of contact are shown on multifunctional color displays in the pilot and operator cockpits (see figure). In addition, color displays in the pilot and operator cockpits show a moving color terrain map, which is especially important when flying at high speed and low altitude at night. Colors are used that are easily visible and that do not tire the pilot's

eyes. Information on the road network and the battlefield with zones of air defense fire, command and control facilities and terrain relief, and also target photographs can be depicted on the map. In planning an operation and penetrating the opposition of enemy air defense forces and assets, it is possible to superimpose this on the display screen when already in flight, which facilitates a choice of the direction of flight and maneuver.

The advantages provided by introducing such devices as night vision goggles, used to monitor the situation more effectively, especially with a low level of illumination, should be noted. The pilot has an opportunity to compare the image of the very same terrain obtained with the help of such goggles and the IR set.

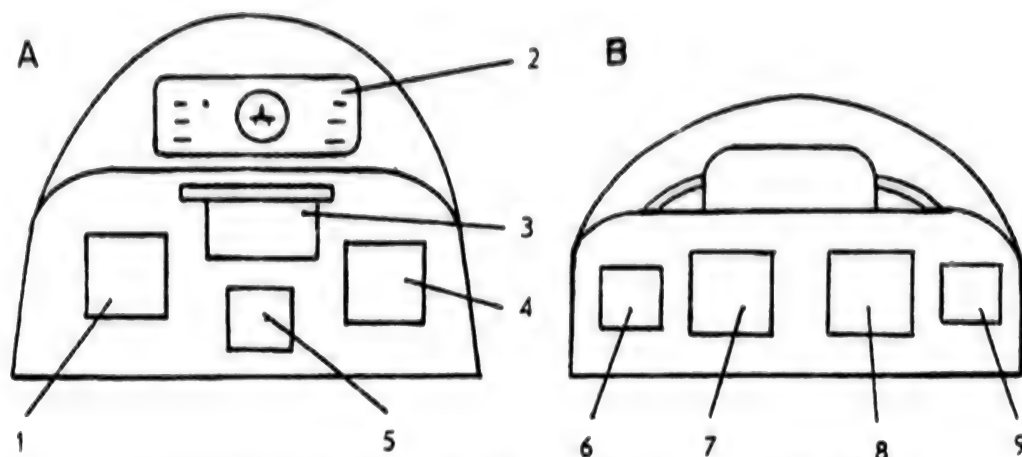
Thus, the special aircraft equipment being developed and introduced creates optimum conditions for obtaining necessary data on targets, the route, and the status of aircraft and weapon systems in a difficult, rapidly changing situation. This makes it easier for the pilot to choose a decision with maximum possible consideration of the situation and it does not constrain his initiative.

U.S. firms presently are performing research and development on integrated systems for collecting, analyzing and transmitting the image and coordinates of ground targets to strike aircraft. Specialists believe that a real possibility will appear in the near future to provide pilots with coordinates and images of small moving targets in real time.

The JSIPS (Joint Service Imagery Processing System) created for the Army, Air Force, Navy and Marines processes and analyzes the video data received in computer centers. It is capable of outputting generalized data in 15 minutes, or in 5-6 minutes when working in an operational mode. Imagery of ground targets goes to these centers from reconnaissance aircraft, satellites and drones in the visible and infrared wavebands as well as from radars operating in a synthetic aperture mode. The possibility of transmitting data directly to tactical fighters presently is being studied.

Practical tests already have been conducted within the scope of the Talon Sword program for transmitting a target image to the cockpit of an F-16 via satellite. For example, in an experimental flight a black-and-white target image and its coordinates were transmitted from a control center in Washington via a relay aircraft to a display in the cockpit of an F-16 fighter in 2 minutes. Using the data received, the pilot quickly acquired the target and launched a HARM antiradar missile. In a second flight in December 1993 the optimum path for configuring an attack on the target was projected on the display in addition to the black-and-white target image and its coordinates.

The STARS (Stored Terrain Access and Retrieval System) has been installed in the aircraft to store and use terrain map data. All data is stored on a 300 megabyte laser disk. The system has a high degree of protection and withstands load factors up to 9. The use of laser



Equipment of pilot (A) and operator (B) cockpits of F-15E strike aircraft:

Key:

1. Monochromatic multifunctional display to which an image is output from AN/APG-70 radar or LANTIRN system terrain relief following radar
2. Head-up display, which replaces standard mechanical display instruments and to which an image from the LANTIRN system can be output
3. Display and control panel for communications, navigation and identification equipment
4. Monochromatic multifunctional display for showing data from the LANTIRN system FLIR set or from a radar illumination warning receiver
5. Color display to which a moving terrain map, data on the status of weapon stores, signals from the built-in monitoring system and JTIDS system data are output
6. Same as 5.
7. Monochromatic multifunctional display for output of radar image (from AN/APG-70 or LANTIRN system) and target designation and navigation data
8. Monochromatic display to which LANTIRN system IR image is output
9. Color display of radar illumination warning receiver signals and JTIDS system data, and for duplicating data from the head-up display

disks for storing a terrain image will significantly increase the area of the territory which a pilot can observe in flight and will permit outputting a 3-D color image to the display. A 240 megabyte magnetic disk displaying an area of 100 square miles is used in the F-117A for solving navigation problems in the target area. A 600 megabyte laser disk presently is being developed.

The introduction of new systems will permit reducing the physical load on the pilot in searching for targets; analyzing incoming data and monitoring flight safety conditions more effectively; increasing the accuracy of missile and bomb strikes while avoiding unnecessary destruction, especially in cities; monitoring results of previous strikes against the target; and increasing the capabilities of aircraft during night operations in any weather conditions.

During the Persian Gulf war a problem arose of detecting mobile tactical and operational-tactical missile launchers and launched ballistic missiles. The possibility is being studied of using an air-based laser guidance system operating in the infrared, ultraviolet and visible wavebands for destroying them in the boost phase (a test

is planned for the late 1990's). It is presumed that it can be installed in a widebody transport aircraft, in a bomber's bomb bay or aboard a remotely piloted vehicle. The laser telescope has an optical mirror with a diameter of at least 1.5 m. Manned aircraft will loiter at a certain distance from the front line and a remotely piloted vehicle will loiter over enemy territory. Such a system should engage ballistic missiles in the boost phase at a distance of from 150 to several hundred kilometers.

The United States, Great Britain and France presently are conducting large-scale work to create a self-organizing, highly survivable electronic system (reserve modules are switched in when there is a failure), which supports the operation of communications, navigation and data processing systems. An upgrading of onboard computer systems will permit wider introduction of expert systems of the "pilot's electronic assistant" (EPL) type, which will relieve the crew of performing certain simple control functions and will permit it to perform more difficult tasks.

The important thing in operation of the EPL is the identification of critical factors of flight and the output of

recommendations on reducing their effect, which permits increasing the time for a situation estimate and decision-making. Below is a list of actions performed by a crew with the EPL (in the future):

- navigation and display of position, nap-of-the-earth flying, route optimization when maneuvering;
- selection of destination airfield, approach to it and output of necessary data on the head-up display;
- monitoring, warning and taking steps during aircraft system and engine failures;
- automatic actions in critical situations;
- assessing the threat of effect of enemy air defense weapons, taking steps to ensure safety, using EW equipment;
- target selection and tracking, weapon selection and aiming;
- situation estimate, development of options for alternative decisions;
- decisionmaking.

Under night flying conditions a pilot will estimate the situation in three dimensions with an angle of view of at least 120° from the instrument panel display and also from the helmet display and head-up display.

Weapons aiming and navigation systems must provide autonomy and concealment of operation, accurate determination of position in low altitude flight (using a lidar), identification of targets, detection of camouflaged and sheltered targets, simultaneous tracking of several airborne and ground targets while continuing to monitor aircraft attitude, help for the pilot in his choice of tactics in employing weapons and EW equipment, and data output on the enemy, countermeasures, terrain relief and weather situation.

Thus, the components of successful night combat operations are considered to be the following: first of all, joint strikes precisely distributed by place and time among tactical, deck-based and strategic aircraft, cruise missiles and drones; secondly, "total blinding" of the enemy and depriving him of all kinds of control systems; thirdly, disarming the enemy in the very first strike in order to deprive him of an opportunity to commit the newest weapons (especially weapons of mass destruction); and fourthly, winning air superiority in the shortest possible time and the simultaneous performance of a set of missions throughout the depth of enemy territory.

Footnotes

1. For beginning of article see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 1, 1995, pp 38-42—Ed

French Leclerc Main Battle Tank

95UM0350B Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 1995 (signed to press 14 Feb 95) pp 24-28

[Article by Major Yu. Charov]

[FBIS Translated Text] In 1978 France began creating a main battle tank of the nineties, which was to replace the AMX-30 and AMX-30B2 tanks in the Army inventory.

The tank, named Leclerc (Fig. 1) [figure not reproduced] was being developed with consideration of modern conditions of land and air-land operations and of capabilities for using the newest technologies.

The tank was developed in several phases: 1978-1982—study of different concepts and general characteristics of the tank; 1982-1986—work with a model; 1986-1991—creation of experimental models and their comprehensive tests; late 1991—production of the first series model.

The first series model of the Leclerc main battle tank, built at an enterprise of the national firm of GIAT, became operational with the French Army in January 1992. The French Army received another two tanks of this model before the end of 1992. In 1993 it was planned to produce 13 tanks, and 60 up to the end of 1995 (for outfitting one brigade). And a total of 850 such vehicles are to be built up to the year 2000 by order of the French Ministry of Defense.

The main specifications and performance characteristics of the French tank are comparable with those of the U.S. M1A2 Abrams, German Leopard 2 and British Challenger 2. It has a number of distinguishing attributes and design features compared with previous series models produced by the French armored vehicle industry.

In accordance with the classic configuration (Fig. 2) [figure not reproduced], the bulk of Leclerc's crew is accommodated in a full-revolving armored turret. The crew consists of three persons, with the commander's place in the turret being to the left of the gun (Fig. 3) [figure not reproduced] and that of the gunner on the right (Fig. 4) [figure not reproduced]. An autoloader is installed in a rear recess of the turret, with an armored bulkhead between it and the fighting compartment. The driver is accommodated in the hull front section, and his workstation (Fig. 5) [figure not reproduced] is offset to the left side.

Because the tank design uses a gun autoloader and compact power plant (with an output of 1,500 hp, the displacement volume of cylinders in the Leclerc engine does not exceed that of the AMX-30 power plant, which develops 750 hp), internal hull volume is considerably less than that of other western models and the length of running gear has been shortened approximately one meter. As a result, the tank's combat weight does not exceed 55 tonnes (it is 62.5 t for the M1A2) and the engine's power-to-weight ratio was 27.5 hp/t, which permits it to reach a speed of 32 km/hr in 5.5 seconds from a standing start. The overall improvement of power plant characteristics did not cause a substantial increase in fuel consumption.

Also included in features of the tank's configuration is that all crew members essentially are isolated from each other and from the gun and autoloader, which increases the effectiveness of protection against mass destruction weapons and reduces gas contamination of the manned space when firing the gun.

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The main Leclerc armament is a 120-mm smoothbore gun, and a 12.7-mm coaxial machinegun, 7.62-mm remotely controlled antiaircraft machinegun on the turret roof plate and a multipurpose grenade launcher are used as secondary armament.

The CN 120-26 gun has an overall length of 7.154 m, muzzle velocity of the armor-piercing discarding-sabot projectile is 1,750 m/sec, and the effective range against armored targets is 3,500 m. There is no fume extractor; after a round is fired there is positive purging of the bore with compressed air (as in the AMX-30), which cools it in addition to removing powder gases. Compressed air is supplied by a four-stroke, four-cylinder compressor installed in the tank turret. Because the gun is placed in a special frame in which the trunnions are fastened, it is installed and dismantled together with the frame without removing the turret.

The Leclerc gun's autoloader, developed by the French firm of Creusot-Loire, is electrical and supports a sustained rate of fire of 12 rounds per minute. The gun's unit of fire includes 40 fixed artillery rounds with combustible case, 22 of which are in the autoloader. Ammunition is loaded into the autoloader through a hatch in the rear of the turret. If necessary it also can be loaded manually by the gunner from inside, since another 18 rounds are accommodated in drum-type battle stowage located in the forward part of the hull to the driver's right. Loading is done from the autoloader control panel (Fig. 6 [figure not reproduced]) with the gun depressed to an angle of 1.8° and when firing both from a halt as well as on the move. The unit of fire includes rounds with shaped charge-fragmentation projectile (HEAT-MP-T, national marking OECL 120 F1) and armor-piercing fin-stabilized discarding-sabot projectile (APFSDS-T, OFL 120 F1). Talks presently are being held about installing this type of autoloader in modernized U.S. M1A2 tanks. Rounds of the Leclerc, Abrams and Leopard 2 tanks are interchangeable. The 12.7-mm machinegun coaxial with the gun has a maximum range of aimed fire of 2,000 m, and at distances to 600 m the bullet's trajectory practically coincides with that of both types of projectiles, which considerably simplifies the aiming process. The unit of fire is 800 cartridges.

The 7.62-mm machinegun is installed behind the gunner's hatch on the turret roof plate and has mechanical gunlaying drives by which both the tank commander as well as the gunner can conduct fire with turret hatches closed. The angle of fire is 360° in azimuth and from -10 to +40° in elevation. The machinegun is easily removed and used as a manual machinegun if necessary. The unit of fire is 2,000 cartridges.

The GALIX multipurpose grenade launcher includes nine 80-mm tubes located on both sides of the turret. A standard set includes four smoke, three antipersonnel and two decoy flare grenades. The smoke grenade (weight 5.1 kg, length 400 mm) is fired to a range of 30-50 m and forms a screen in a sector up to 120°. Duration of smoke generation is 30 seconds. On detonating, the antipersonnel grenade (2.8 kg,

340 mm) forms around 1,000 fragments, each weighing 0.2 grams and with a velocity up to 1,600 m/sec. Antipersonnel grenades are fired to approximately 15 m and engage enemy personnel located behind or to one side of the tank at a distance to 30 m. Decoy flare grenades form interference for antitank missiles with infrared homing heads.

Their effect lasts 10 seconds after being fired. Leclerc's set of instrumentation and electronics is made with consideration of the latest engineering and technological achievements in the given area. The fire control system has the following makeup: commander's and gunner's sights with built-in laser rangefinders; thermal-imaging camera; eight commander's observation periscopes; onboard automatic weather station showing atmospheric pressure, air temperature, and wind velocity and direction; dynamic muzzle reference system; and weapon stabilizer (in two planes). All fire control system elements are connected to the fire control system computer, which calculates firing data, inputs necessary corrections and monitors the operation of all systems and hardware. The time needed for placing the fire control system in a combat-ready state does not exceed one minute from the moment it is turned on.

The commander's sight is independent, two-channel, with a stabilized field of view. The day firing channel has two magnifications, which enables detecting targets at a distance up to 4,600 m. The effective range of the passive night vision channel is 500 m. The sight permits the commander to give target designations to the gunner or to conduct fire from the gun and coaxial machinegun independently. The head of the gunner's sight is rigidly fixed in the gun's armored mantlet and the ocular part is fixed in the turret. The sight's field of view is stabilized in two planes. Each of the eight commander's observation periscopes has a target designation button. When the button is pressed, the gun is shifted automatically to the given device's line of sight.

The dynamic muzzle reference system includes a low-power laser located on the gun's armored mantlet and a sensor which receives its beam reflected from a mirror above the muzzle end of the gun barrel. During firing, this system constantly monitors the coordination of gun and sight. In case a mismatch arises, the fire control system computer automatically inputs necessary corrections to the sight. Leclerc's weapon stabilizer has electric turret and gunlaying drives (hydraulic systems and hardware for reducing the likelihood of fire breaking out has been completely excluded from the turret design). It permits conducting aimed fire when the tank is moving over rugged terrain at a speed of 36 km/hr or more, and the speed of engaged targets may reach 72 km/hr. The tank turret has a self-contained emergency power supply system powered from a storage battery, which also serves for powering fire control system devices and assemblies with the engine not operating.

In addition to electronic systems of the fire control system, the following are installed in the tank: a second onboard computer (controls other tank systems and if

necessary is capable of performing fire control system computer functions); electronic units for controlling the autoloader, engine, gearbox, system for protection against the effect of mass destruction weapons, fire-extinguishing system and so on; tank intercom; VHF/UHF [UKV] radio capable of transmitting voice reports and data in digital and graphic forms; and a navigation system. Leclerc's radios can be connected to a common radio net with command and control centers at regimental and division echelons.

The above elements are component parts of the tank data-control system, which is combined with a unified regimental battle management system. It transmits formatted data on the tank's location, direction of movement, ammunition expenditure, fuel consumption and so on in an automatic mode to the regimental command post and to the subunit commander, receives instructions and orders (in voice, graphic and digital forms) and

communicates them to the tank commander. U.S. M1A2 Abrams tanks are being equipped with similar systems at the present time.

Leclerc's set of instrumentation and electronics has a high level of survivability. The most important electrical circuits and systems are backed up. The cost of the entire complex approaches 60 percent of the cost of the entire vehicle. Leclerc's frontal armor is of a multilayer, modular type using ceramics, kevlar and steel plates of varying hardness. Damaged modules can be replaced under field conditions. Idler wheels and the two front roadwheels are protected against shaped charges by skirts. Frontal armor of the turret and hull guarantees reliable protection against all existing antitank munitions and does not require installation of supplementary reactive armor. The UDV-8X engine is a V-8 (included angle of cylinders 90°) single-fuel diesel with turbo-supercharging (it weighs 2,100 kg and the working volume of cylinders is 16.48 liters). Specifications and performance characteristics of Leclerc are given in the table.

Specifications and Performance Characteristics of Leclerc Tank

Characteristics	Indicators
Combat weight, t	54.6
Crew	3
Dimensions, m	
Length with gun forward	9.87
Length of hull (less supplementary tanks)	6.88
Width	3.71
Overall height	2.923
Height at turret top	2.532
Clearance, m	0.5
Mean ground pressure, kg/cm ²	0.98
Armament	
Smoothbore gun, number x caliber, mm	1x120
Angles of fire, degrees:	
vertical	From -8 to +15
horizontal	360
Projectile muzzle velocity, m/sec	
discarding-sabot	1750
shaped-charge-fragmentation	1,100
Effective range of fire, m	Up to 3,500
Unit of fire, rounds	40
Coaxial machinegun, number x caliber, mm	1x12.7
Unit of fire, rounds	800
Machinegun mounted on turret, number x caliber, mm	1x7.62
Unit of fire, rounds	2,000
Multipurpose grenade launcher, caliber, mm	80
Number of tubes	9
Range, m	From 15 to 50

Specifications and Performance Characteristics of Leclerc Tank (Continued)

Characteristics	Indicators
Power plant	
Type, make	Diesel, UDV-8X
Power at 2,500 rpm, hp	1,500
Specific fuel consumption, g/kw-hr	230
Cooling	Water
Transmission	
Type	Mechanical automatic, with electronic control unit
Number of gears (forward/backward)	5/2
Suspension:	
Type	Hydropneumatic, independent
Roadwheel travel, mm	300
Maximum speed, km/hr	
Highway	71
Reverse	38
Offroad	50
Obstacles negotiated	
Ascent at angle, degrees	30
Wall, height, m	1.25
Ditch, width, m	3
Ford, depth, m	
Without preparation	1
With preliminary preparation	2.3
With underwater kit	4
Capacity of fuel tanks (another two can be installed), liters	1,300 (200 each)
Fuel consumption in movement	
Highway, liters/km	2-3
Offroad, liters/hr	146
Highway range (with supplementary tanks), km	550 (720)

ASW and Information Technology

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[Article by Captain-Lieutenant N. Rezyapov: "ASW and Information Technologies"]

[FBIS Translated Text] Antisubmarine warfare (in the terminology of U.S. and NATO navies) remains a priority direction for development of western navies. As noted in the foreign press, within the framework of new views on military security questions, where regional and local conflicts now are regarded as the greatest threat, the importance of readiness for combating nonnuclear submarines of "third world" countries is growing along with continuing importance of opposition to Russian Navy submarine forces. In the opinion of western experts, should operations be necessary, they will be conducted basically in shallow coastal areas with the performance

of "force projection" missions by naval forces (delivery of strikes against shore targets and conduct of amphibious landing operations).

The specifics of operations in such areas generates certain concern in naval weapons and ordnance specialists, and so efforts are being made in the West, and above all in the United States, for a qualitative upgrading of corresponding systems and complexes in the inventory of its Navy.

The last decades demonstrate the rather swift development (although also with the preservation of an evolutionary character) both of means of detecting submarines as well as of antisubmarine weapons, which is connected with progress in the electronics area and with upgrading of data processing equipment and information technologies as a whole. The following can be included among the main features in development of modern means of detecting submarines:

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- gradual displacement of passive by active detection equipment—bistatic and multistatic—in a complex with data processing equipment, which is connected with the continuing noise level reduction of modern submarines and is especially pertinent for shallow-water areas;
- a shift toward use of the low-frequency band of audio signals in sonar equipment (infrasound), which permits achieving long submarine detection ranges;
- development of nonacoustic detection equipment along with sonar, and wide introduction of fiber-optic engineering.

All this becomes possible basically because of the sufficient level of development of information technologies, use of digital data processing hardware based on specialized processors, wide use of computer programs and mathematical models which optimize search efforts of ASW forces, and large data bases on hydrologic conditions of the area of operations and of characteristics of different targets.

The most promising among nonacoustic means today are space assets. In particular, good results are provided by a search for submarines located at a depth of 100 m or less using a synthetic-aperture radar installed on a spacecraft, which permits detecting surface waves arising during a submarine's movement. True, this search method largely depends on the submarine's speed and submergence depth. Further, based on the property of a laser in the green-blue spectrum to penetrate water to a depth of several hundred meters, lidars are being developed which, it is believed, also can be used successfully in shallow-water areas, including for hunting mines. There also are infrared submarine detection systems. But operation of the latter equipment depends heavily on weather conditions.

A modern magnetometer permits detecting a submarine at a depth to 600 m, but it is used primarily to refine (localize) a submarine's location after she has been detected by acoustic equipment. It is believed that introduction of the high-temperature superconductivity method (the Squid magnetometer is being developed) will give the device a sensitivity even exceeding the requisite level, although this will complicate the problem of discriminating a valid signal against the background of interference (or the target signature from the geomagnetic background).

Nevertheless, foreign specialists believe that for the near term sonar systems will remain the principal means of long-range detection and tracking of submarines, since of all physical fields created by submarines, the hydroacoustic field will remain the most informative and the one which makes a submarine stand out most among background fields of the marine environment. In addition, nonacoustic equipment cannot for now fully provide target designation for onboard weapons and will be used in areas with poor hydrology and also with the enemy's mass use of sonar countermeasures.

High capacity fiber-optic equipment (a fiber-optic communications line already has been created with a capacity of 1.7 Gbit/sec) is used in data exchange and communications nets and as a means of data transmission from hydrophones of

fixed detection systems, including in an advanced system such as the FDS (Fixed Distributed System). Research is being performed on their use as acoustic sensors; sonar arrays; temperature and pressure sensors and sensors for determining the orientation of a long towed array for more precise localization of target position and determination of its motion; in the "nonpenetrating" type of electro-optical periscopes; and in a number of other instruments and devices.

New data processing equipment is being used in sonar to compensate for the platform's internal noise, discriminate a valid signal at the interference level, form a sonar array radiation pattern, identify a target (including also in ASW weapon homing systems), and for other purposes.

Computer simulation of combat operations is used in planning the development of ASW forces and operational employment of forces, in estimating the situation and command and control of ASW forces in the course of combat operations, and for operational and combat training, for training personnel (various trainers and simulators) and so on. Such models encompass all spectra of activity of ASW forces, beginning with global models of warfare within the framework of the Navy as a whole through models of individual operations to models of operations by individual elements of ASW forces, including in duel situations.

Capabilities of onboard computers of various ASW platforms presently permit realizing the development of scenarios of force operations in hunting submarines and creating automated systems for planning in performing tactical missions (Tactical Planning Aid). Thus, the SALT (Search and Localization Tactical Decision Aid) system, a subsystem of Update 4, takes on the functions of calculating the number of sonobuoys and variations in placing them. Modern mathematical models also are used in predicting the nature of the distribution curve of sonar signals, reverberation parameters, and level of interference and background noises; in selecting the most suitable operating mode of detection equipment; and in computing the probability of detecting different targets.

The appearance of data processing hardware and software permitting this work to be done in real time was an enormous step forward. Such means include specialized microcircuits for filtering a signal, performing a Fourier transform and multiplying matrices; microprocessors realizing methods of performing parallel operations; and computers assembled from similar components. For example, the Oryx Super Signal Processor computer has a speed of over 160 million floating-point operations per second and permits processing data from a long towed array with 64 receivers, outputting data with a periodicity of 3 minutes.

The new EMSP processor has been developed, which uses Ada language, is programmable and has a library of signal processing procedures and algorithms which enables graphic depiction of data processing results. It found use in such systems as SQQ-89 (an integrated sonar system combining ASW assets of surface ships),

Update 4 (a system for land-based patrol aircraft), SURTASS (long-range sonar surveillance vessels), LAMPS III (ASW helicopters), FDS (advanced fixed distributed detection system) and BSY-2 (Seawolf-Class SSN automated battle management system). Networks of such processors, usually with linear architecture, now are being used more and more widely for rapid performance of specific operations, which significantly increases the flexibility of their use.

The new data processing hardware and software permits substantially increasing the capabilities of detection systems and complexes and permits their platforms to search for targets more effectively while preserving high maneuverability and high search speed. In the opinion of foreign experts, existing detection systems, including space and other nonacoustic systems, sharply improve their capacity in a complex with modern data processing technology, which permits reducing the quantitative level of mobile ASW forces without reducing the effectiveness of performing missions.

Plans for creating a global antisubmarine surveillance and reconnaissance system to perform the mission of hunting, detecting and continuously tracking the activity of enemy submarines are being coordinated fully with the transition from the concept of "forward defense" to "forward surveillance" (reconnaissance). The advanced integrated system for underwater situation coverage within the framework of a unified C³I concept, which presently is based on systems of fixed assets (including SOSUS), Stalwart-Class long-range sonar surveillance vessels equipped with sonars with the SURTASS long towed array, submarines and surface ships with STASS and TACTASS systems, and ship-based and shore-based aircraft and helicopters, will permit the U.S. Navy and NATO command to display the underwater situation of any region of the World Ocean and control ASW forces in real time.

The development of detection assets and ASW weapons is closely linked at the present stage with further upgrading of automated battle management systems, which connect submarine detection equipment and systems, ASW weapons, communications and data processing, navigational systems and so on in a common complex. The BSY-2 automated battle management system for Seawolf-Class SSN's and the Update 4 system for P-3 Orion land-based patrol aircraft can be cited as examples. Today no one casts doubt any longer on the enormous role and importance of the automated battle management system. General characteristics of the most advanced systems and their predecessors being used on submarines and in land-based patrol aircraft are of interest in this connection.

Thus, the BSY-1 system, predecessor of the BSY-2 automated battle management system, includes 117 different devices and 11.5 nm of communications lines with an overall weight of 32 tonnes and a power consumption of 142 KW. Software represents 3.6 million lines of code, the size of working memory is 60 megabytes, disk memory is 400 megabytes, and speed is up to

120 million operations per second. It is capable of processing data from five sonars.

The BSY-2 system has a fiber-optic line with a capacity of 50 megabits per second, combining all devices into a unified network. Software consists of 3 million lines of code in Ada programming language, now adopted as standard for military systems. It includes 102 devices and has six EMSP data processors (three processors of data from detection equipment and three for forming the radiation pattern of sonar arrays). The system includes 25 displays and can support the functioning of 7 sonars, fire control and employment of missile (Tomahawk cruise missile and Harpoon antiship missile) and torpedo weaponry, and it supports the guidance of four Mk 48 torpedoes to different targets simultaneously.

Similar systems also are being developed in other countries. In Great Britain it is the SMCS (Submarine Multiscreen Command System) automated battle management system, intended for nuclear powered missile and multipurpose submarines. It also is built on the basis of a local computer network using a fiber-optic communications line. The system uses the Intel 80386 and Motorola 68030 microprocessors. It has on the order of 64 transputers supporting a capacity of 50 million operations per second. The software shell consists of around one million lines of code in Ada language. Power consumption is 3.5 KW, which enables installing it on diesel submarines. The automated battle management system being developed by the Norwegian firm of NFT for FRG Navy Type 212 submarines permits tracking 24 targets simultaneously and employing weapons against four simultaneously.

The Australian Navy ACS (Advanced Combat System) automated battle management system is of special interest. Its distinctive feature is the use of expert systems based on artificial intelligence principles. An expert system performs automatic localization of position and classification of detected targets, which is very apropos in areas with intensive shipping or, for example, in an area of combat maneuvering of task forces, when an excessive data flow arises and a person simply is incapable of coping with operator functions. The system also computes necessary parameters supporting maneuvering and employment of weapons. Data are cited according to which this automated battle management system can track 200 targets simultaneously, localize at least 25 of them, guarantee employment of weapons against no fewer than six targets simultaneously, and process data from eight detection assets. The ACS is intended for Australian Navy Collins-Class submarines and, according to foreign press data, will be in use from 1995 on.

The SOAS (Submarine Operational Automation System) under development is a U.S. system with wide use of artificial intelligence principles. Its chief element consists of neural networks and expert systems. It is noted that it will surpass the Australian system by a great deal, and its use on Navy combatants is planned beginning in the year 2000.

The previously mentioned SQQ-89 integrated data processing system is intended for use on U.S. ships with the Aegis system. Its chief component is the Mk 116, Mod. 7 ASW Control System, which combines onboard sonar (SQS-53), TACTASS (SQR-19), LAMPS III (SQQ-28) and others. The modernized ADAWS automated battle management system of British light carriers (ADIMP) presumes the presence of the CCA (Captain's Combat Aid) expert system as part of software, the purpose of which is to support decisionmaking by the formation commander, including with respect to ASW. (Carrier hunter-killer groups may be formed on the basis of British light carriers to support ASW of the NATO Striking Fleet Atlantic.)

With respect to the Update 4 system of P-3 Orion land-based patrol aircraft, foreign specialists say that its use enables achieving five times greater probability of detecting submarines with 97 percent success in performing the detection task than with its previous Update 3 version. Data are cited that it has 2.5 times higher data processing speed, 8 times more memory and 5 times greater reliability compared with the very same characteristics of Update 3. A local computer network based on a fiber-optic communications line with a capacity of 192 megabits per second is present in the system (presently only 29 percent of this capacity is being used). Use of the EMSP processor (in place of the UYS-1) permits processing data simultaneously from 54 rather than 16 sonobuoys. Software consists of 836,000 lines of code in Ada language. The Update 4 system has been in use since 1994.

A process presently is under way of "merging" different concepts of using ASW helicopters, which is reflected in outfitting them with their own data processing equipment. Judging from statements by representatives of NATO navies, advanced NH-90 and EH-101 helicopters equipped with their own data processing equipment will greatly surpass existing ones in characteristics. Thanks to signal processing equipment, their low-frequency dipping sonar should support a target acquisition range up to 10 km (at least 4-5 km in shallow-water areas) and have the capability of processing data on several targets simultaneously. The helicopters will be able to take aboard up to 50 sonobuoys and have electronics permitting the receipt and processing of data from 16 buoys simultaneously. A magnetic detector also will be interfaced with a computer which stores a library of characteristics of standard target signals in memory.

In the future even individual sonobuoys used from land-based patrol aircraft and from helicopters will have their own means of primary correlation processing of signals and will realize algorithms for automatic target detection based on onboard processors, which will increase the submarine acquisition range and will reduce time spent conducting ASW operations.

The presence of data processing equipment in the homing and remote-control systems of torpedoes, mine-torpedoes and mine ordnance, which presently are the principal means of destroying submarines, will permit a

significant increase in their effectiveness and will increase the probability of the homing system locking onto the target and the success of employing weapons in a difficult situation, including with enemy use of countermeasures.

Stages of development of submarine detection equipment singled out by foreign naval specialists can be cited as a small summary of this survey of data processing equipment and use of information technologies in the sphere of ASW:

- first—development of low-frequency technology in postwar years, which concluded with the creation of a towed sonar array in the 1960's;
- second, which concerns to a greater extent the process of signal processing—beginning of electronic forming of the radiation pattern of towed arrays and the appearance of the first automated battle management systems in the early 1980's;
- third—adaptive forming of the radiation pattern of sonar arrays and the appearance of fixed arrays, and also the appearance of BSY-1 and BSY-2 systems and specialized processors such as the EMSP;
- the current phase involves introducing artificial intelligence principles and the appearance of a new element base and software based on expert systems, neural networks and transputers using "acquired" knowledge.

As we see, the most advanced directions of development of science and engineering, especially information technologies, are touched on here. Progress in the area of information technologies will permit introducing self-contained submersibles to the inventory of submarines; as a result, in the opinion of specialists, this will revolutionize the entire ASW system and change the very concept of ASW, not to mention operating tactics of ASW forces, and submarines above all. A self-contained vehicle will be created that is used from submarines, is capable of operating both independently as well as in coordination with her, and has "intelligence."

One of the first models of a miniature robot submarine, Sova [as transliterated], declassified by the firm of International Robotic Systems, is 3 m long and is capable of developing a speed up to 65 km/hr. This submarine can use the data of satellite navigation systems. Another model of such a vehicle is the submersible MUST (Mobile Undersea System Testbed) created in 1988 by Martin Marietta for testing new technologies in the area of command and control systems and detection equipment. It is equipped with a sonar with data processing system and is controlled on the basis of an expert system; control system software consists of 30,000 lines of code in C language.

Thus, the western countries' breakthrough in using the most advanced information technologies in the area of naval arms demands fully adequate efforts by us, since otherwise our very best ships soon will look like medieval caravels against their background.

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